Part II

EVERYDAY CONTRIBUTORS TO CHEMICAL IMBALANCE AND LOW MOODS

Whether healthy or depressed, active or sedentary, whether we're eighteen, thirty-eight or sixty-eight, all of us are affected by the same principles of health maintenance. Some of the hearty ones can get by with poor nutrition and unhealthy habits for many years before the cumulative negative results begin to manifest. This makes it easier for us to deny the connection between our lifestyles and our health. Yet, in the final analysis, we cannot avoid the simple fact that what goes into our bodies absolutely affects our overall health, quality and quantity of life, and mood.

Everyone has stories about exceptions, like uncle Jack who drank three whiskies a day and lived relatively well and happily until age ninety-four. My own grandfather drank one to two bottles of wine daily for all the years I knew him and then died suddenly and peacefully at home when he was eighty-three, without obvious suffering or illness. My grandmother likes to boast he had no gray hair and all of his original teeth, with no cavities. She fed him well—and regularly—and I say good genes contributed, because his smoking but non-drinking sister recently died at one hundred three and another sister died at ninety-

I will apply dietetic measures for the benefit of the sick according to my ability and judgment;
I will keep them from harm and injustice.

—from The Hippocratic Oath,
translation by Ludwig Edelstein
Ares Publishers, New York, 1979
Whether healthy or depressed, active or sedentary, whether we're eighteen, thirty-eight or sixty-eight, all of us are affected by the same principles of health maintenance. Some of the hearty ones can get by with poor nutrition and unhealthy habits for many years before the cumulative negative results begin to manifest. This makes it easier for us to deny the connection between our lifestyles and our health. Yet, in the final analysis, we cannot avoid the simple fact that what goes into our bodies absolutely affects our overall health, quality and quantity of life, and mood.

Everyone has stories about exceptions, like uncle Jack who drank three whiskies a day and lived relatively well and happily until age ninety-four. My own grandfather drank one to two bottles of wine daily for all the years I knew him and then died suddenly and peacefully at home when he was eighty-three, without obvious suffering or illness. My grandmother likes to boast he had no gray hair and all of his original teeth, with no cavities. She fed him well—and regularly—and I say good genes contributed, because his smoking but non-drinking sister recently died at one hundred three and another sister died at ninety-

---

I will apply dietetic measures for the benefit of the sick according to my ability and judgment; I will keep them from harm and injustice.

—from The Hippocratic Oath, translation by Ludwig Edelstein
Ares Publishers, New York, 1979
six. His cirrhotic liver did make a difference, and likely cut short his own genetic plan.

Usually it's no single factor that does us in, but the combination that gives such a negative potential. A heavy drinker who eats marvelously healthfully or takes vitamins will withstand the wear far better than the boozer who skips many meals and subsists primarily on the "beverage."

Since there are so many variables influencing us, and since some of them can interfere with or undermine this nutrient treatment, it is important that you read on in order to understand the program within the context of overall good physical and mental habits. Certain conditions in your life may need to change to ensure the long-lasting excellent benefits others have achieved.

As you read about all the variables capable of influencing your mood, you may need to evaluate specific health conditions further. Perhaps you will suspect allergies, thyroid problems, chronic yeast infection or blood sugar problems. Though laboratory tests are not necessary to undertake this treatment, you may refer to the appendix for a list of tests I've used in evaluating many patients who come to me.

We will now consider some factors leading to the unbalanced brain chemistry that, in turn, causes mood changes or even actual depression.
The branch of psychiatry that deals with the psychological effects of common nutritional deficiencies is called orthomolecular psychiatry. The avant garde group of psychiatrists who use this approach evaluate and treat many mental symptoms and illnesses from a nutritional point of view.

Even Freud, if he were alive today, would likely recognize and commend these methods. In his later years, when vitamins and minerals were first being identified and studied in earnest, he wrote, "The future may teach us to exercise a direct influence, by means of particular chemical substances, upon the amounts of energy and their distribution in the mind. . . . I am firmly convinced that one day all these disturbances we are trying to understand will be treated by means of hormones or similar substances."

Orthomolecular Therapy

Nobel Laureate Dr. Linus Pauling coined the term "orthomolecular." He defines it as "the treatment of mental disease by the provision of the optimum mo-
molecular environment of the mind, especially optimum concentrations of substances normally found in the human body."

The rationale behind the orthomolecular approach is the following: there is ample evidence, as described in Part I, that some psychologically disturbed people have unusual or abnormal metabolism of one or more vitamins, minerals, amino acids or essential fatty acids. These people often have nutrient needs above the average and far above the "minimal" standards set in the RDA. Some researchers have described these states of increased need as a vitamin dependency syndrome.

Even the general so-called healthy population has demonstrated individual biochemical diversity and a consequent wide range of daily nutrient needs. You may flourish on 5 mg of vitamin B₉ daily, while your neighbor may need 500 mg to achieve the same results. The average American diet is deficient in several nutrients by RDA standards and even more so by optimum health standards. Many life habits or conditions either interfere with absorption or utilization or use up excessive amounts of certain nutrients.

There is sufficient clinical evidence that inadequate vitamin levels initially cause a depression of the vitamin enzyme activities. These enzyme activities facilitate most of the chemical reactions in our bodies. When they are malfunctioning, the first symptoms produced are those of subtle psychological and physical impairment rather than the full symptom complex of a frank deficiency syndrome.

**RDA Versus Optimal Levels**

In using nutritional treatment, I make a clear distinction for my patients between the RDA and optimal nutrient levels. The RDA is the *minimum* amount necessary to avoid a deficiency illness, but is not the recommended amount for good health.

Plain common sense tells us that what we need to keep from being ill is different from what we need for the best of health. The amount of food needed to keep us from starvation is quite different from that required for our ideal weight, in the same way that the amount of water and fertilizer which keeps a rose bush alive is hardly enough to produce a plant resplendent with aromatic, opulent bloom.

But the rose can receive too much water and fertilizer. Quantities and balance are extremely important. There are optimum dosages beyond which beneficial effects diminish, and even harmful effects can occur. It is wise not to exceed these dosages.

**Food Alone Is Rarely Enough**

Even by conservative RDA standards, the average American diet is commonly deficient in vitamins B₁, B₂, B₉, folic acid, C, E and iron. Naturally, other deficiencies also occur. Only the rare "balanced diet" of the best natural, unrefined, unprocessed, wholesome foods has a possible chance of meeting all of our nutritional needs. And how many of us daily eat the following traditional idea of a balanced diet?

1. Four portions of whole grain products
2. Four portions of fresh fruits and vegetables (with at least one of each being uncooked)
3. Two portions of meat products (or fish, poultry, eggs, beans, peas or nuts)
4. Two to three portions of milk or milk products
molecular environment of the mind, especially optimum concentrations of substances normally found in the human body."

The rationale behind the orthomolecular approach is the following: there is ample evidence, as described in Part I, that some psychologically disturbed people have unusual or abnormal metabolism of one or more vitamins, minerals, amino acids or essential fatty acids. These people often have nutrient needs above the average and far above the “minimal” standards set in the RDA. Some researchers have described these states of increased need as a vitamin dependency syndrome.

Even the general so-called healthy population has demonstrated individual biochemical diversity and a consequent wide range of daily nutrient needs. You may flourish on 5 mg of vitamin B₆ daily, while your neighbor may need 500 mg to achieve the same results. The average American diet is deficient in several nutrients by RDA standards and even more so by optimum health standards. Many life habits or conditions either interfere with absorption or utilization or use up excessive amounts of certain nutrients.

There is sufficient clinical evidence that inadequate vitamin levels initially cause a depression of the vitamin enzyme activities. These enzyme activities facilitate most of the chemical reactions in our bodies. When they are malfunctioning, the first symptoms produced are those of subtle psychological and physical impairment rather than the full symptom complex of a frank deficiency syndrome.

**RDA Versus Optimal Levels**

In using nutritional treatment, I make a clear distinction for my patients between the RDA and optimal nutrient levels. The RDA is the *minimum* amount necessary to avoid a deficiency illness, but is not the recommended amount for good health.

Plain common sense tells us that what we need to keep from being ill is different from what we need for the best of health. The amount of food needed to keep us from starvation is quite different from that required for our ideal weight, in the same way that the amount of water and fertilizer which keeps a rose bush alive is hardly enough to produce a plant resplendent with aromatic, opulent bloom.

But the rose can receive too much water and fertilizer. Quantities and balance are extremely important. There are optimum dosages beyond which beneficial effects diminish, and even harmful effects can occur. It is wise not to exceed these dosages.

**Food Alone is Rarely Enough**

Even by conservative RDA standards, the average American diet is commonly deficient in vitamins B₁, B₂, B₆, folic acid, C, E and iron. Naturally, other deficiencies also occur. Only the rare “balanced diet” of the best natural, unrefined, unprocessed, wholesome foods has a possible chance of meeting all of our nutritional needs. And how many of us daily eat the following traditional idea of a balanced diet?

1. Four portions of whole grain products
2. Four portions of fresh fruits and vegetables (with at least one of each being uncooked)
3. Two portions of meat products (or fish, poultry, eggs, beans, peas or nuts)
4. Two to three portions of milk or milk products
I know I would be fat if I ate this much every day, and such a diet excludes vegetarians, those who must restrict cholesterol, those on calorie-restricted diets, those with allergies and many others.

Computer analyses of hundreds of patients’ food intake has revealed no diet with fewer than three to four nutrient deficiencies by RDA standards and even more deficiencies by optimum measurements. I personally have tried eating a variety of healthy, seemingly balanced diets only to find that my diet remains stubbornly deficient after all. Further, I have never seen a single patient whose diet tested adequately in all the B vitamins at RDA levels. Worse, they rarely test at the optimum level in even one of the several B vitamins.

These dietary analyses have also revealed the following trends:

1. Low complex carbohydrates
2. High refined carbohydrates
3. High protein (but unbalanced amino acid intake)
4. High fat
5. Low fiber
6. Low vitamin B complex
7. Low vitamin C and bioflavonoids
8. Variable amounts of minerals, but generally low magnesium

Any one of these trends is undesirable. Put several of them together, as is usually the case, and we’re just a short step from creating the biochemical imbalance that can cause mood changes and other health problems. Many of us are more careful about giving our animals the proper diet than we are about what we feed ourselves. It is truly a tribute to the adaptive capacity of the human organism that we do as well as we do, although several large population studies have revealed that 80 percent of us suffer from some sort of “dis-ease.”

There is a tremendous amount of scientific data to support these observations and it has frustrated me at times to see bestselling books by novices in the field saying the opposite, that what you eat is sufficient for your needs. There really should be no controversy. In lieu of faddish reading, please refer to the appendix for a list of excellent books on nutrition written by experts with years of training and experience in biochemistry, clinical practice and research.

Rarely does food alone supply an “adequate,” let alone “optimal” amount of all the different essential nutrients. Also, there are many “elective” circumstances that necessitate greater than usual amounts of certain nutrients, circumstances that interfere with absorption and metabolism, procedures for food growth and processing that deplete the nutrients in your food, and so on. For instance, if you are a smoker each cigarette causes your body to utilize 25 mg of vitamin C—at one and a half packs daily that would be 750 mg of vitamin C just to break even, without having any left over for the multitude of bodily functions related to vitamin C. When you consider that the average diet I see contains from 100 to 300 mg of vitamin C, you get some idea of the potential for deficiency.

Habits and Conditions

Any of the following can create a similar increased need for one or more nutrients and hence can lead to deficiencies.
I know I would be fat if I ate this much every day, and such a diet excludes vegetarians, those who must restrict cholesterol, those on calorie-restricted diets, those with allergies and many others.

Computer analyses of hundreds of patients’ food intake has revealed no diet with fewer than three to four nutrient deficiencies by RDA standards and even more deficiencies by optimum measurements. I personally have tried eating a variety of healthy, seemingly balanced diets only to find that my diet remains stubbornly deficient after all. Further, I have never seen a single patient whose diet tested adequately in all the B vitamins at RDA levels. Worse, they rarely test at the optimum level in even one of the several B vitamins.

These dietary analyses have also revealed the following trends:

1. Low complex carbohydrates
2. High refined carbohydrates
3. High protein (but unbalanced amino acid intake)
4. High fat
5. Low fiber
6. Low vitamin B complex
7. Low vitamin C and bioflavonoids
8. Variable amounts of minerals, but generally low magnesium

Any one of these trends is undesirable. Put several of them together, as is usually the case, and we’re just a short step from creating the biochemical imbalance that can cause mood changes and other health problems. Many of us are more careful about giving our animals the proper diet than we are about what we feed ourselves. It is truly a tribute to the adaptive capacity of the human organism that we do as well as we do, although several large population studies have revealed that 80 percent of us suffer from some sort of “dis-ease.”

There is a tremendous amount of scientific data to support these observations and it has frustrated me at times to see bestselling books by novices in the field saying the opposite, that what you eat is sufficient for your needs. There really should be no controversy. In lieu of faddish reading, please refer to the appendix for a list of excellent books on nutrition written by experts with years of training and experience in biochemistry, clinical practice and research.

Rarely does food alone supply an “adequate,” let alone “optimal” amount of all the different essential nutrients. Also, there are many “elective” circumstances that necessitate greater than usual amounts of certain nutrients, circumstances that interfere with absorption and metabolism, procedures for food growth and processing that deplete the nutrients in your food, and so on. For instance, if you are a smoker each cigarette causes your body to utilize 25 mg of vitamin C—at one and a half packs daily that would be 750 mg of vitamin C just to break even, without having any left over for the multitude of bodily functions related to vitamin C. When you consider that the average diet I see contains from 100 to 300 mg of vitamin C, you get some idea of the potential for deficiency.

Habits and Conditions

Any of the following can create a similar increased need for one or more nutrients and hence can lead to deficiencies.
1. Stress (who is excluded from this?)
2. Excess caffeine (more than one cup of coffee a day—see page 144) or alcohol (more than two drinks daily)
3. Excess sugar or other refined carbohydrates such as white flour, pastas, etc.
4. Tobacco use
5. Street drug use (such as cocaine, heroin, amphetamines, marijuana)
6. Regular use of aspirin, sleeping pills or tranquilizers
7. Use of birth control pills
8. Use of certain prescription medications (See page 150)
9. Dieting for weight loss, exclusion diets for food allergies or special diets for various illnesses
10. Vegetarianism
11. High fiber or phytate diets
12. Exposure to pesticides via water, air or food, and other pollution
13. Work with chemicals (painting, gardening, photo developing, etc.)
14. Drinking chlorinated or fluoridated water
15. Pregnancy or nursing
16. Puberty
17. Old age
18. Physical illness, especially: cancer, anorexia nervosa, burns, post-surgery or post-trauma, diabetes, chronic kidney or liver disease, any kind of gastrointestinal disorder, infections and inflammations, psoriasis, AIDS or ARC, and intestinal parasites

**Which Nutrients Can Influence Your Mood?**

It is probably safe to say that all of the essential nutrients needed by our bodies are also needed by our brain cells. An inadequate supply of any will cause some aberration in brain function, however subtle. Still, as we saw earlier, certain substances are more related to mood control than others. Especially important are:

- The amino acids tyrosine or phenylalanine, and tryptophan
- The B vitamins—in particular, B₆, folic acid and biotin
- Vitamin C
- The minerals (as enzymes)—magnesium, zinc, iron, copper, and manganese
- Pancreatic enzymes

In addition to the above brain amine forming nutrients, vitamins B₁, B₂, B₃, B₅ and B₁₂ also influence your mood by different mechanisms.

Each nutrient has multiple bodily effects, but our focus is on the role of these particular nutrients in orchestrating your moods, on how to determine if you have specific deficiencies, and how to go about correcting them. The charts beginning on page 241 in the Appendix summarize this information.

**Vitamins and Mood**

**The B Vitamins**

The first clinical effects of insufficient vitamin B complex are mood changes, insomnia, changed appetite, sugar craving, impaired drug metabolism and a decrease in immune function.

The B vitamins are “synergistic” with each other, which means that each one works best in the presence of an adequate amount of all the others. Therefore, a distinct deficiency of any of the B vitamins can partially impair the effectiveness of the rest. Also, an excess or toxicity of any B vitamin is more likely to occur if it is taken singly, without the addition of the entire vitamin B complex group. Different manufac-
1. Stress (who is excluded from this?)
2. Excess caffeine (more than one cup of coffee a day—see page 144) or alcohol (more than two drinks daily)
3. Excess sugar or other refined carbohydrates such as white flour, pastas, etc.
4. Tobacco use
5. Street drug use (such as cocaine, heroin, amphetamines, marijuana)
6. Regular use of aspirin, sleeping pills or tranquilizers
7. Use of birth control pills
8. Use of certain prescription medications (See page 150)
9. Dieting for weight loss, exclusion diets for food allergies or special diets for various illnesses
10. Vegetarianism
11. High fiber or phytate diets
12. Exposure to pesticides via water, air or food, and other pollution
13. Work with chemicals (painting, gardening, photo developing, etc.)
14. Drinking chlorinated or fluoridated water
15. Pregnancy or nursing
16. Puberty
17. Old age
18. Physical illness, especially: cancer, anorexia nervosa, burns, post-surgery or post-trauma, diabetes, chronic kidney or liver disease, any kind of gastrointestinal disorder, infections and inflammations, psoriasis, AIDS or ARC, and intestinal parasites

**Which Nutrients Can Influence Your Mood?**

It is probably safe to say that all of the essential nutrients needed by our bodies are also needed by our brain cells. An inadequate supply of any will cause some aberration in brain function, however subtle. Still, as we saw earlier, certain substances are more related to mood control than others. Especially important are:

- The amino acids tyrosine or phenylalanine, and tryptophan
- The B vitamins—in particular, B₆, folic acid and biotin
- Vitamin C
- The minerals (as enzymes)—magnesium, zinc, iron, copper, and manganese
- Pancreatic enzymes

In addition to the above brain amine forming nutrients, vitamins B₁, B₂, B₃, B₅ and B₁₂ also influence your mood by different mechanisms.

Each nutrient has multiple bodily effects, but our focus is on the role of these particular nutrients in orchestrating your moods, on how to determine if you have specific deficiencies, and how to go about correcting them. The charts beginning on page 241 in the Appendix summarize this information.

**Vitamins and Mood**

**The B Vitamins**

The first clinical effects of insufficient vitamin B complex are mood changes, insomnia, changed appetite, sugar craving, impaired drug metabolism and a decrease in immune function.

The B vitamins are “synergistic” with each other, which means that each one works best in the presence of an adequate amount of all the others. Therefore, a distinct deficiency of any of the B vitamins can partially impair the effectiveness of the rest. Also, an excess or toxicity of any B vitamin is more likely to occur if it is taken singly, without the addition of the entire vitamin B complex group. Different manufac-
turers use varying ratios of B's in the vitamin B complex supplements. What is important is that the vitamins all be present in sufficient workable quantities, rather than in absolutely equal amounts.

As a group, the B vitamins play an important role both in alleviating depression and in relieving the anxiety and restlessness which often accompanies it, perhaps partly because of the effect of the B vitamins on lactic acid. Exercise and certain metabolic processes cause the formation of lactic acid when there is inadequate vitamin B complex or oxygen. It is this accumulation of lactic acid in your muscles that makes them sore if you strenuously exercise without gradually building up to it. Excess lactic acid can also produce anxiety.

**Vitamin B₆ (Pyridoxine)**

Vitamin B₆ has major importance in regulating your moods, and is the most implicated of all the vitamins in the cause and treatment of depression. Depressed persons show evidence of insufficient vitamin B₆ as commonly as they show decreased tyrosine, phenylalanine or tryptophan.

Without adequate vitamin B₆, the amino acids are not much use to you. Vitamin B₆ literally controls all the amino acid metabolism and transformations in your body. It also regulates amino acid absorption from your gastrointestinal tract and directly participates in carbohydrate and fat metabolism as well as in the formation of red blood cells and antibodies. It is also required for the proper functioning of over sixty enzyme systems in our bodies.

As previously mentioned, the American diet tends toward high protein and high fat. This creates a greater requirement for vitamin B₆. But the average daily diet only contains about 2 mg of this vitamin. This supply is further depleted by stress, alcohol, tobacco, birth control pills, pregnancy, antibiotics and many other medications.

It is important to take the active coenzyme forms of the B vitamins for these vitamins to function adequately. Many supplements contain the inactive pyridoxine, or pyridoxine hydrochloride, form of B₆, which your liver must convert to a usable form. If, for whatever reason, this conversion does not take place, B₆ cannot be used by your body.

In 1983 there was an uproar in the press about so-called toxic problems with vitamin B₆. These were reported in a few self-medicated individuals who took 1000 to 6000 mg daily over a period of two to forty months, without adding in other B vitamins or a multivitamin mineral. This amount of B₆ taken alone over that period of time would create a severe imbalance and interfere with the other B vitamins. The reversible neurological side effects experienced with these megadoses were theorized to be the result of vitamin B₆ toxicity, yet toxicity was never proven, and more likely contributors were the multi-B vitamin deficiencies and magnesium depletion, which would occur on such a lopsided program. Some researchers also feel the symptoms were related to taking the B₆ in the inactive pyridoxine form rather than in the usable coenzyme form mentioned above.

The message is simple: only take vitamin B₆ when you are also taking vitamin B complex and keep the dosages somewhat proportionate. If you stay within the limits recommended in this book, you should have no problems. Remember the rule is one of balance.

**Vitamin B₁ (Thiamine)**

This vitamin is essential for nerve stimulation, and for metabolism of carbohydrates to give brain energy...
turers use varying ratios of B’s in the vitamin B complex supplements. What is important is that the vitamins all be present in sufficient workable quantities, rather than in absolutely equal amounts.

As a group, the B vitamins play an important role both in alleviating depression and in relieving the anxiety and restlessness which often accompanies it, perhaps partly because of the effect of the B vitamins on lactic acid. Exercise and certain metabolic processes cause the formation of lactic acid when there is inadequate vitamin B complex or oxygen. It is this accumulation of lactic acid in your muscles that makes them sore if you strenuously exercise without gradually building up to it. Excess lactic acid can also produce anxiety.

Vitamin B₆ (Pyridoxine)

Vitamin B₆ has major importance in regulating your moods, and is the most implicated of all the vitamins in the cause and treatment of depression. Depressed persons show evidence of insufficient vitamin B₆ as commonly as they show decreased tyrosine, phenylalanine or tryptophan.

Without adequate vitamin B₆, the amino acids are not much use to you. Vitamin B₆ literally controls all the amino acid metabolism and transformations in your body. It also regulates amino acid absorption from your gastrointestinal tract and directly participates in carbohydrate and fat metabolism as well as in the formation of red blood cells and antibodies. It is also required for the proper functioning of over sixty enzyme systems in our bodies.

As previously mentioned, the American diet tends toward high protein and high fat. This creates a greater requirement for vitamin B₆. But the average daily diet only contains about 2 mg of this vitamin. This supply is further depleted by stress, alcohol, tobacco, birth control pills, pregnancy, antibiotics and many other medications.

It is important to take the active coenzyme forms of the B vitamins for these vitamins to function adequately. Many supplements contain the inactive pyridoxine, or pyridoxine hydrochloride, form of B₆, which your liver must convert to a usable form. If, for whatever reason, this conversion does not take place, B₆ cannot be used by your body.

In 1983 there was an uproar in the press about so-called toxic problems with vitamin B₆. These were reported in a few self-medicated individuals who took 1000 to 6000 mg daily over a period of two to forty months, without adding in other B vitamins or a multivitamin mineral. This amount of B₆ taken alone over that period of time would create a severe imbalance and interfere with the other B vitamins. The reversible neurological side effects experienced with these megadoses were theorized to be the result of vitamin B₆ toxicity, yet toxicity was never proven, and more likely contributors were the multi-B vitamin deficiencies and magnesium depletion, which would occur on such a lopsided program. Some researchers also feel the symptoms were related to taking the B₆ in the inactive pyridoxine form rather than in the usable coenzyme form mentioned above.

The message is simple: only take vitamin B₆ when you are also taking vitamin B complex and keep the dosages somewhat proportionate. If you stay within the limits recommended in this book, you should have no problems. Remember the rule is one of balance.

Vitamin B₁ (Thiamine)

This vitamin is essential for nerve stimulation, and for metabolism of carbohydrates to give brain energy
as well as body energy. It is also needed for the synthesis of the neurotransmitter acetylcholine.

Vitamin B₁ is commonly deficient because stress, alcohol, sugar, refined carbohydrates, and particularly caffeine, deplete our bodies of this nutrient. For instance, research on rats showed that daily consumption of tea for twenty-five weeks produced a 60 percent decrease in total brain B₁.

You can suspect a deficiency of vitamin B₁ if, in addition to low mood, you have at least five of the following: chronic fatigue, irritability, memory loss, personality changes (including aggression), insomnia, anxiety, restlessness, night terrors, appetite loss, sensitivity to noise, numbness and tingling in your hands and feet, and circulation problems—and no other explanation for your symptoms has been found.

If you have five or more of these symptoms, consider doubling the vitamin B complex dosage on page 56, and add an extra 200 to 500 mg of daily vitamin B₁ for the first three months of the program. Carefully follow the whole program as outlined.

**Vitamin B₂ (Riboflavin)**

Vitamin B₂ is important in all the cell energy systems in your body, especially in assisting in the metabolism of proteins, carbohydrates and fats. Together with vitamin B₁, it promotes the effectiveness of thyroid hormone and insulin, both of which can influence your mood. It is also related to the stress response.

Although vitamin B₂ itself has not generally been associated with emotional states, researchers find that diets restricted only in riboflavin produce adverse personality changes, including aggressive personality alterations, as the first symptom of dietary inadequacy.

Riboflavin indirectly participates in amino acid metabolism because it is necessary for your liver’s activation of vitamin B₆ into the form your body can utilize. Taking a large amount of the pyridoxine form of B₆ without having sufficient B₂ for this conversion will do you little good and is another example of the need for balance among the B vitamins.

**Vitamin B₃ (Niacin)**

Niacin deficiency has been associated with depression and anxiety. One link may be that niacin can be formed from tryptophan. If there is a dietary deficiency of niacin or an unusual need for it, tryptophan may be used to make niacin, leaving less of it available to form serotonin, one of the neurotransmitters implicated in depression.

Niacin works with vitamin B₁ to help with the oxidation of sugar and to promote proper brain metabolism. It helps to maintain our energy by degrading carbohydrates, fats and proteins and participates in the manufacture of certain hormones and proteins. It helps with irritability and other mental disturbances, binding to the same “receptor sites” in the brain as do the tranquilizers Librium and Valium, and producing a similar calming response.

With mood disorders I generally do not prescribe any more vitamin B₃ than is present in the vitamin B complex and multivitamin mineral capsules, unless an individual is severely agitated, anxious or has an associated form of schizophrenia. In some cases high dose niacin in the niacinamide form can actually create a side effect of depression, so it is important to avoid daily doses of niacinamide over 500 mg unless there is a clear indication for it. Vitamin B₃ in very high doses is one of the basic orthomolecular therapeutic agents successfully used in treating schizophrenia, together with other nutrients, especially vitamin C and the other B vitamins. There are many
as well as body energy. It is also needed for the synthesis of the neurotransmitter acetylcholine.

Vitamin B1 is commonly deficient because stress, alcohol, sugar, refined carbohydrates, and particularly caffeine, deplete our bodies of this nutrient. For instance, research on rats showed that daily consumption of tea for twenty-five weeks produced a 60 percent decrease in total brain B1.

You can suspect a deficiency of vitamin B1 if, in addition to low mood, you have at least five of the following: chronic fatigue, irritability, memory loss, personality changes (including aggression), insomnia, anxiety, restlessness, night terrors, appetite loss, sensitivity to noise, numbness and tingling in your hands and feet, and circulation problems—and no other explanation for your symptoms has been found.

If you have five or more of these symptoms, consider doubling the vitamin B complex dosage on page 56, and add an extra 200 to 500 mg of daily vitamin B1 for the first three months of the program. Carefully follow the whole program as outlined.

Vitamin B2 (Riboflavin)

Vitamin B2 is important in all the cell energy systems in your body, especially in assisting in the metabolism of proteins, carbohydrates and fats. Together with vitamin B1, it promotes the effectiveness of thyroid hormone and insulin, both of which can influence your mood. It is also related to the stress response.

Although vitamin B2 itself has not generally been associated with emotional states, researchers find that diets restricted only in riboflavin produce adverse personality changes, including aggressive personality alterations, as the first symptom of dietary inadequacy.

Riboflavin indirectly participates in amino acid metabolism because it is necessary for your liver’s activation of vitamin B6 into the form your body can utilize. Taking a large amount of the pyridoxine form of B6 without having sufficient B2 for this conversion will do you little good and is another example of the need for balance among the B vitamins.

Vitamin B3 (Niacin)

Niacin deficiency has been associated with depression and anxiety. One link may be that niacin can be formed from tryptophan. If there is a dietary deficiency of niacin or an unusual need for it, tryptophan may be used to make niacin, leaving less of it available to form serotonin, one of the neurotransmitters implicated in depression.

Niacin works with vitamin B1 to help with the oxidation of sugar and to promote proper brain metabolism. It helps to maintain our energy by degrading carbohydrates, fats and proteins and participates in the manufacture of certain hormones and proteins. It helps with irritability and other mental disturbances, binding to the same “receptor sites” in the brain as do the tranquilizers Librium and Valium, and producing a similar calming response.

With mood disorders I generally do not prescribe any more vitamin B3 than is present in the vitamin B complex and multivitamin mineral capsules, unless an individual is severely agitated, anxious or has an associated form of schizophrenia. In some cases high dose niacin in the niacinamide form can actually create a side effect of depression, so it is important to avoid daily doses of niacinamide over 500 mg unless there is a clear indication for it. Vitamin B3 in very high doses is one of the basic orthomolecular therapeutic agents successfully used in treating schizophrenia, together with other nutrients, especially vitamin C and the other B vitamins. There are many
publications available on this treatment that can be obtained through sources in the appendix.

Supplemental vitamin $B_3$ comes in both a niacin and a niacinamide form. The niacin form can cause nonharmful temporary skin flushing, itching and nausea in some individuals. These side effects can be decreased by using a time-release pill. It can also slightly raise blood sugar and aggravate ulcers, so if you have diabetes or ulcers, refrain from large doses of niacin. The niacinamide form does not cause flushing or stomach irritation or other side effects at this dosage of 500 mg.

**Vitamin $B_3$ (Pantothenic Acid)**

Vitamin $B_3$ is a precursor essential for the formation of certain hormones and for certain biochemical reactions. Vitamin $B_3$ also promotes amino acid uptake and antibody synthesis. It is active in the formation of the neurotransmitter acetylcholine, which can be involved in some depressions. A deficiency can cause depression, fatigue and allergies. This vitamin is particularly prone to depletion with chronic stress.

**Vitamin $B_{12}$ (Cyanocobalamin or Hydroxycobalamin)**

This vitamin is important for the health and maintenance of your nerve cells and of the nerve tracts in your spinal column. The mental changes caused by a deficiency of vitamin $B_{12}$ can range from difficulty in concentrating or remembering, mental fatigue and low moods, to a severe stuporous depression, intense agitation, hallucinations and manic or paranoid behavior. There can also be neurological problems and anemia.

You can only absorb about 1 percent of the vitamin $B_{12}$ in your diet or in supplements. Fortunately, under optimal conditions you only need 1 to 3 mcg daily and you would have to take only 100 to 300 mcg to get this, allowing for the poor rate of absorption.

Because of the poor stomach absorption, I usually do not give vitamin $B_{12}$ orally except for what is present in the vitamin $B$ complex combination. Instead, I give it in a "sublingual" form available in most health food stores. You dissolve the tablet under your tongue upon arising in the morning. Since the substance goes into your blood stream through the blood vessels under your tongue, you absorb more than you would by the gastrointestinal route.

If you are over fifty-five, vegetarian or alcoholic, have extreme fatigue, poor memory, low thyroid or weight loss, I recommend you take 1000 to 2000 mcg of the sublingual form every morning.

Though it is extremely rare, an untreated vitamin $B_{12}$ deficiency can ultimately be fatal.

**Folic Acid**

Folic acid is needed to form brain norepinephrine and serotonin. It also helps maintain the secretions of steroids from your adrenal glands and so is particularly useful in times of stress. It has a major function in DNA and RNA synthesis and helps form antibodies as well.

Perhaps one reason that folic acid is one of the most commonly deficient vitamins is that alcohol interferes with its metabolism. If you drink regularly, you probably need extra folic acid. The elderly also commonly lack folic acid. In one study of elderly people unable to care for themselves, 67 percent had a folic acid deficiency. Besides the elderly and those using alcohol, those on anticonvulsant drugs, birth control pills and certain other medicines are at high risk for deficiency.

Folic acid deficiency can create depression, memory problems, fatigue and anemia. Since a similar
publications available on this treatment that can be obtained through sources in the appendix.

Supplemental vitamin B₃ comes in both a niacin and a niacinamide form. The niacin form can cause nonharmful temporary skin flushing, itching and nausea in some individuals. These side effects can be decreased by using a time-release pill. It can also slightly raise blood sugar and aggravate ulcers, so if you have diabetes or ulcers, refrain from large doses of niacin. The niacinamide form does not cause flushing or stomach irritation or other side effects at this dosage of 500 mg.

**Vitamin B₅ (Pantothenic Acid)**

Vitamin B₅ is a precursor essential for the formation of certain hormones and for certain biochemical reactions. Vitamin B₅ also promotes amino acid uptake and antibody synthesis. It is active in the formation of the neurotransmitter acetylcholine, which can be involved in some depressions. A deficiency can cause depression, fatigue and allergies. This vitamin is particularly prone to depletion with chronic stress.

**Vitamin B₁₂ (Cyanocobalamin or Hydroxycobalamin)**

This vitamin is important for the health and maintenance of your nerve cells and of the nerve tracts in your spinal column. The mental changes caused by a deficiency of vitamin B₁₂ can range from difficulty in concentrating or remembering, mental fatigue and low moods, to a severe stuporous depression, intense agitation, hallucinations and manic or paranoid behavior. There can also be neurological problems and anemia.

You can only absorb about 1 percent of the vitamin B₁₂ in your diet or in supplements. Fortunately, under optimal conditions you only need 1 to 3 mcg daily and you would have to take only 100 to 300 mcg to get this, allowing for the poor rate of absorption.

Because of the poor stomach absorption, I usually do not give vitamin B₁₂ orally except for what is present in the vitamin B complex combination. Instead, I give it in a “sublingual” form available in most health food stores. You dissolve the tablet under your tongue upon arising in the morning. Since the substance goes into your blood stream through the blood vessels under your tongue, you absorb more than you would by the gastrointestinal route.

If you are over fifty-five, vegetarian or alcoholic, have extreme fatigue, poor memory, low thyroid or weight loss, I recommend you take 1000 to 2000 mcg of the sublingual form every morning.

Though it is extremely rare, an untreated vitamin B₁₂ deficiency can ultimately be fatal.

**Folic Acid**

Folic acid is needed to form brain norepinephrine and serotonin. It also helps maintain the secretions of steroids from your adrenal glands and so is particularly useful in times of stress. It has a major function in DNA and RNA synthesis and helps form antibodies as well.

Perhaps one reason that folic acid is one of the most commonly deficient vitamins is that alcohol interferes with its metabolism. If you drink regularly, you probably need extra folic acid. The elderly also commonly lack folic acid. In one study of elderly people unable to care for themselves, 67 percent had a folic acid deficiency. Besides the elderly and those using alcohol, those on anticonvulsant drugs, birth control pills and certain other medicines are at high risk for deficiency.

Folic acid deficiency can create depression, memory problems, fatigue and anemia. Since a similar
anemia is also caused by vitamin B₁₂ depletion it's important, to avoid further complications, to use them both as supplements. Vitamin B₁₂ and folic acid are present in vitamin B complex preparations. Those in the high risk groups for deficiency should double their vitamin B complex dosage.

A person in depression with easy fatigability may respond well to folic acid therapy, because folic acid is energizing. However, excess amounts of more than 5 mg daily can create the side effect of a hyperexcited, overactive, irritable, insomniac, euphoric state and may aggravate seizure problems.

Folic acid helps increase estrogen levels, so it can be useful for those with menopausal symptoms, but since female hormone administration may be associated with breast and uterine cancer, those with cancer should avoid large doses of folic acid. In these conditions 600 to 800 mcg daily would be the top supplemental limit.

If you are on anticancer chemotherapy, ask your doctor if the chemotherapy drug is an agent which blocks folic acid metabolism. If it is, do not exceed a total dose of 600 to 800 mcg. Your multivitamin mineral and your vitamin B complex added together will supply this amount.

Biotin

Biotin is one of the coenzymes helping to form brain serotonin. It is essential for normal metabolism of fat and protein. Known biotin deficiencies are not common, but a group of human volunteers placed on a biotin-deficient diet developed depression, weakness, hallucinations and panic. Generally, skin and hair problems also develop with biotin deficiency.

Raw egg whites contain a substance which destroys biotin, so someone eating a great many whole raw eggs could encounter a deficiency. Also, those on

high doses of antibiotics can develop a biotin deficiency.

Vitamin C

Vitamin C is needed to form both norepinephrine and serotonin. It also helps to protect against the oxidation or breakdown of norepinephrine.

Vitamin C has a profound stimulating effect on the adrenal glands, so that, during times of stress, our bodies require more vitamin C.

Few diets have enough of this vitamin for its basic uses in the first place, without considering that extra amounts are needed when we are exposed to dietary and inhalant chemicals, alcohol, smoking, drugs, stress, mercury, lead, cadmium and a myriad of other toxins. This is because vitamin C acts as a detoxifier to actually help remove these unwanted substances from our bodies. With low vitamin C, the toxins are free to accumulate gradually, finally contributing to many disease states.

Magnesium

Magnesium, another of the coenzymes needed to form the brain amines, is active in the metabolism of amino acids and carbohydrates, and aids in your body’s utilization of vitamins C and E. Magnesium also helps convert the B vitamins into a form your body can use; thus a magnesium deficiency could indirectly lead to a vitamin B complex deficiency. Very large amounts of vitamin B complex, or vitamin B₆ without sufficient magnesium, tend to deplete available magnesium as well as limit the usability of the B complex vitamins. Put simply, the more vitamin B complex you take, the more magnesium you need.

Magnesium deficiency can create depression, restlessness, irritability, an increased sense of hearing accompanied by a pronounced startle response, agi-
anemia is also caused by vitamin B₁₂ depletion it's important, to avoid further complications, to use them both as supplements. Vitamin B₁₂ and folic acid are present in vitamin B complex preparations. Those in the high risk groups for deficiency should double their vitamin B complex dosage.

A person in depression with easy fatigability may respond well to folic acid therapy, because folic acid is energizing. However, excess amounts of more than 5 mg daily can create the side effect of a hyperexcited, overactive, irritable, insomniac, euphoric state and may aggravate seizure problems.

Folic acid helps increase estrogen levels, so it can be useful for those with menopausal symptoms, but since female hormone administration may be associated with breast and uterine cancer, those with cancer should avoid large doses of folic acid. In these conditions 600 to 800 mcg daily would be the top supplemental limit.

If you are on anticancer chemotherapy, ask your doctor if the chemotherapy drug is an agent which blocks folic acid metabolism. If it is, do not exceed a total dose of 600 to 800 mcg. Your multivitamin mineral and your vitamin B complex added together will supply this amount.

Biotin

Biotin is one of the coenzymes helping to form brain serotonin. It is essential for normal metabolism of fat and protein. Known biotin deficiencies are not common, but a group of human volunteers placed on a biotin-deficient diet developed depression, weakness, hallucinations and panic. Generally, skin and hair problems also develop with biotin deficiency.

Raw egg whites contain a substance which destroys biotin, so someone eating a great many whole raw eggs could encounter a deficiency. Also, those on high doses of antibiotics can develop a biotin deficiency.

Vitamin C

Vitamin C is needed to form both norepinephrine and serotonin. It also helps to protect against the oxidation or breakdown of norepinephrine.

Vitamin C has a profound stimulating effect on the adrenal glands, so that, during times of stress, our bodies require more vitamin C.

Few diets have enough of this vitamin for its basic uses in the first place, without considering that extra amounts are needed when we are exposed to dietary and inhalant chemicals, alcohol, smoking, drugs, stress, mercury, lead, cadmium and a myriad of other toxins. This is because vitamin C acts as a detoxifier to actually help remove these unwanted substances from our bodies. With low vitamin C, the toxins are free to accumulate gradually, finally contributing to many disease states.

Magnesium

Magnesium, another of the coenzymes needed to form the brain amines, is active in the metabolism of amino acids and carbohydrates, and aids in your body's utilization of vitamins C and E. Magnesium also helps convert the B vitamins into a form your body can use; thus a magnesium deficiency could indirectly lead to a vitamin B complex deficiency.

Very large amounts of vitamin B complex, or vitamin B₆ without sufficient magnesium, tend to deplete available magnesium as well as limit the usability of the B complex vitamins. Put simply, the more vitamin B complex you take, the more magnesium you need.

Magnesium deficiency can create depression, restlessness, irritability, an increased sense of hearing accompanied by a pronounced startle response, agi-
tation, anxiety, insomnia, disorientation, confusion and even hallucinations. Researchers have found significantly lower levels of magnesium in the blood and cerebrospinal fluid of depressed patients, and the lowest levels in suicidal patients. (It's interesting that lithium, the well-known antimanic and antidepressant drug, helps increase the magnesium level in the blood; we can wonder if this contributes to its effectiveness.)

Deficiency is common because the typical American diet only provides one half to one third of the 400 mg RDA. Alcoholics have particularly depleted magnesium, and its lack is one of the causes of delerium tremens, or DT's. Extra magnesium is also required when its absorption and retention are decreased by other factors such as physical and mental stress, a moderate intake of sugar, alcohol and caffeine, and a high intake of protein, fat, calcium, salt, refined carbohydrates and phosphates. The blood concentration of magnesium varies in relation to that of calcium, and this ratio in turn affects nerve transmission and muscle contraction. Excess calcium such as you would get with a high intake of dairy products would tend to decrease your magnesium levels. For this reason, given the American lifestyle, the RDA would be more accurately increased to 500 to 800 mg daily.

People living in soft water areas such as the southeastern U.S. tend to have much lower magnesium levels than those in “hard” water areas such as the southwest. It would be interesting to know if there is a greater percentage of depression in the soft water areas, because these regions do have a high rate of kidney stone disease, also related to the insufficient magnesium. Magnesium deficiency also plays a significant role in the development of heart disease and irregularities, and high blood pressure, and many cases are successfully treated by appropriate supplementation.

The preferred forms are magnesium orotate or aspartate, because they are readily absorbed. Sufficient vitamin B₆ and thyroid hormone also promote magnesium absorption. Supplemental magnesium should not be given to those who are in kidney failure, or suffering from the rare Addison’s disease or myasthenia gravis.

Zinc
Zinc is necessary for brain amine formation. It is also involved in multiple physiological functions, and deficiency can be associated with many physical and some psychiatric disorders.

The average American diet contains about 10 mg daily, while the RDA is 15 mg. Zinc is reported to be deficient in the soils of thirty-two of our states. In addition, a high-fiber diet impairs the absorption of zinc if taken at the same time, so do not take minerals with bran or a fiber supplement. Estrogen pills and high copper levels in the body will contribute to zinc deficiency. On the other hand, excess zinc over 100 mg daily on a long-term basis can cause your body to lose copper and iron and to actually develop an iron or copper deficiency anemia.

Vitamins E and B₆ are synergistic with zinc, so it may not be possible to correct a zinc deficiency without also insuring adequate amounts of vitamins E and B₆.

Iron
Iron is a coenzyme needed to form the brain amines. It is also needed for proper metabolism of the B vitamins. An iron-related depression would likely be associated with poor attention span, listlessness and fatigue. There may also be irritability, head-
tation, anxiety, insomnia, disorientation, confusion and even hallucinations. Researchers have found significantly lower levels of magnesium in the blood and cerebrospinal fluid of depressed patients, and the lowest levels in suicidal patients. (It's interesting that lithium, the well-known antimanic and antidepressant drug, helps increase the magnesium level in the blood; we can wonder if this contributes to its effectiveness.)

Deficiency is common because the typical American diet only provides one half to one third of the 400 mg RDA. Alcoholics have particularly depleted magnesium, and its lack is one of the causes of delerium tremens, or DT's. Extra magnesium is also required when its absorption and retention are decreased by other factors such as physical and mental stress, a moderate intake of sugar, alcohol and caffeine, and a high intake of protein, fat, calcium, salt, refined carbohydrates and phosphates. The blood concentration of magnesium varies in relation to that of calcium, and this ratio in turn affects nerve transmission and muscle contraction. Excess calcium such as you would get with a high intake of dairy products would tend to decrease your magnesium levels. For this reason, given the American lifestyle, the RDA would be more accurately increased to 500 to 800 mg daily.

People living in soft water areas such as the southeastern U.S. tend to have much lower magnesium levels than those in “hard” water areas such as the southwest. It would be interesting to know if there is a greater percentage of depression in the soft water areas, because these regions do have a high rate of kidney stone disease, also related to the insufficient magnesium. Magnesium deficiency also plays a significant role in the development of heart disease and irregularities, and high blood pressure, and many cases are successfully treated by appropriate supplementation.

The preferred forms are magnesium orotate or aspartate, because they are readily absorbed. Sufficient vitamin B₆ and thyroid hormone also promote magnesium absorption. Supplemental magnesium should not be given to those who are in kidney failure, or suffering from the rare Addison's disease or myasthenia gravis.

Zinc

Zinc is necessary for brain amine formation. It is also involved in multiple physiological functions, and deficiency can be associated with many physical and some psychiatric disorders.

The average American diet contains about 10 mg daily, while the RDA is 15 mg. Zinc is reported to be deficient in the soils of thirty-two of our states. In addition, a high-fiber diet impairs the absorption of zinc if taken at the same time, so do not take minerals with bran or a fiber supplement. Estrogen pills and high copper levels in the body will contribute to zinc deficiency. On the other hand, excess zinc over 100 mg daily on a long-term basis can cause your body to lose copper and iron and to actually develop an iron or copper deficiency anemia.

Vitamins E and B₆ are synergistic with zinc, so it may not be possible to correct a zinc deficiency without also insuring adequate amounts of vitamins E and B₆.

Iron

Iron is a coenzyme needed to form the brain amines. It is also needed for proper metabolism of the B vitamins. An iron-related depression would likely be associated with poor attention span, listlessness and fatigue. There may also be irritability, head-
aches, feelings of numbness and tingling, and a burning sensation on the tongue.

Iron deficiency is the most common chronic disease in the world. Government surveys show that American women, children and teenagers have been in a dietary decline since 1950 in terms of meeting the RDA for iron (whereas the average American man has enough, if not too much, iron).

Most women have had iron deficiency anemia at some time in their lives. This condition is especially common during pregnancy. At least twenty million people in the U.S. are deficient in iron, including young women, children, those who are socio-economically oppressed and the elderly infirm.

Vitamin C will enhance iron absorption, while caffeine, antacids, high-fiber cereals and tetracycline will inhibit absorption. It’s easy to get a blood test measuring the iron level and total iron storage (ferritin) in the blood. This can be a guide for whether supplementation is indicated. It is possible to store and accumulate too much iron, which can be toxic. Because of this potential, I recommend iron-free vitamins for men and post menopausal women. Children and menstruating or pregnant women often need some additional iron. If you do take iron, avoid the ferrous sulfate form, as it is less tolerable to the digestive system. Also use an amino acid chelated iron product, 50 to 100 mg, three times daily, or buy a multivitamin mineral which contains iron.

Manganese

Manganese is needed for brain amine formation, so a deficiency can be associated with depression. Manganese also activates a number of enzyme systems necessary for the utilization of vitamins C and B complex. It is essential for proper pituitary functioning and therefore indirectly helps regulate hormones.

Those with insufficient manganese levels also tend toward allergies and mood-changing low blood sugar problems.

Dietary manganese deficiencies are not uncommon because our soils are depleted of this mineral, which affects our vegetables and fruits. Because large amounts of calcium and iron inhibit manganese absorption, people who eat a lot of dairy foods, or who supplement too much calcium or iron, need to take a multivitamin mineral containing manganese. Excess phosphorus, such as is found in soft drinks and junk food diets, can also inhibit manganese absorption.

Are Nutrient Toxicities Possible?

"Balanced" supplements are essential. If you are going to supplement at all, this approach will decrease the likelihood of problems with doses of single substances. Sometimes a person reads about the merits of a particular nutrient, starts taking it, and goes overboard on the dosage thinking "these same positive effects can be increased in the proportion that I increase the dose." Wrong! Optimum dosages should be followed and not exceeded unless prescribed by a nutritionally aware doctor as treatment for specific medical conditions or symptoms.

Toxic reactions are possible with some nutrients at extremely high doses. It is very important not to overdo vitamins A and D, because they are stored in the body.

In general, though, vitamins are essential to your health and are relatively harmless. In some instances you have to take amounts thousands of times the RDA before toxicity can occur. By comparison, many standard prescription drugs have no such leeway;
aches, feelings of numbness and tingling, and a burning sensation on the tongue.

Iron deficiency is the most common chronic disease in the world. Government surveys show that American women, children and teenagers have been in a dietary decline since 1950 in terms of meeting the RDA for iron (whereas the average American man has enough, if not too much, iron).

Most women have had iron deficiency anemia at some time in their lives. This condition is especially common during pregnancy. At least twenty million people in the U.S. are deficient in iron, including young women, children, those who are socio-economically oppressed and the elderly infirm.

Vitamin C will enhance iron absorption, while caffeine, antacids, high-fiber cereals and tetracycline will inhibit absorption. It’s easy to get a blood test measuring the iron level and total iron storage (ferritin) in the blood. This can be a guide for whether supplementation is indicated. It is possible to store and accumulate too much iron, which can be toxic. Because of this potential, I recommend iron-free vitamins for men and post menopausal women. Children and menstruating or pregnant women often need some additional iron. If you do take iron, avoid the ferrous sulfate form, as it is less tolerable to the digestive system. Also use an amino acid chelated iron product, 50 to 100 mg, three times daily, or buy a multivitamin mineral which contains iron.

Manganese

Manganese is needed for brain amine formation, so a deficiency can be associated with depression. Manganese also activates a number of enzyme systems necessary for the utilization of vitamins C and B complex. It is essential for proper pituitary functioning and therefore indirectly helps regulate hormones.

Those with insufficient manganese levels also tend toward allergies and mood-changing low blood sugar problems.

Dietary manganese deficiencies are not uncommon because our soils are depleted of this mineral, which affects our vegetables and fruits. Because large amounts of calcium and iron inhibit manganese absorption, people who eat a lot of dairy foods, or who supplement too much calcium or iron, need to take a multivitamin mineral containing manganese. Excess phosphorus, such as is found in soft drinks and junk food diets, can also inhibit manganese absorption.

Are Nutrient Toxicities Possible?

“Balanced” supplements are essential. If you are going to supplement at all, this approach will decrease the likelihood of problems with doses of single substances. Sometimes a person reads about the merits of a particular nutrient, starts taking it, and goes overboard on the dosage thinking “these same positive effects can be increased in the proportion that I increase the dose.” Wrong! Optimum dosages should be followed and not exceeded unless prescribed by a nutritionally aware doctor as treatment for specific medical conditions or symptoms.

Toxic reactions are possible with some nutrients at extremely high doses. It is very important not to overdo vitamins A and D, because they are stored in the body.

In general, though, vitamins are essential to your health and are relatively harmless. In some instances you have to take amounts thousands of times the RDA before toxicity can occur. By comparison, many standard prescription drugs have no such leeway;
<table>
<thead>
<tr>
<th>Vitamin</th>
<th>RDA</th>
<th>Optimum</th>
<th>Treatment</th>
<th>Side Effects</th>
<th>Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>B₁ (Thiamine)</td>
<td>1.5</td>
<td>10-25</td>
<td>10-500</td>
<td>Over 1000</td>
<td>8000-24,000</td>
</tr>
<tr>
<td>B₂ (Riboflavin)</td>
<td>1.8</td>
<td>10-15</td>
<td>10-500</td>
<td>Over 1000</td>
<td>No Known Toxicity</td>
</tr>
<tr>
<td>B₃ (Niacin)</td>
<td>15-20</td>
<td>50-150</td>
<td>100-3000</td>
<td>Over 3000</td>
<td>70,000-280,000</td>
</tr>
<tr>
<td>B₅ (Pantothenic acid)</td>
<td>5-10</td>
<td>50-200</td>
<td>10-1000</td>
<td>Over 10,000</td>
<td>No Known Toxicity</td>
</tr>
<tr>
<td>B₆ (Pyridoxine)</td>
<td>2.0</td>
<td>10-25</td>
<td>10-500</td>
<td>Over 2000</td>
<td>Over 210,000</td>
</tr>
<tr>
<td>B₁₂ (mcg)</td>
<td>3.0</td>
<td>20-100</td>
<td>10-2000</td>
<td>None Known</td>
<td>No Known Toxicity</td>
</tr>
<tr>
<td>Folic Acid (mcg)</td>
<td>400</td>
<td>400-1000</td>
<td>400-10,000</td>
<td>Over 3000</td>
<td>No Known Toxicity</td>
</tr>
<tr>
<td>Biotin (mcg)</td>
<td>100-200</td>
<td>300-600</td>
<td>300-1200</td>
<td>Over 50,000</td>
<td>No Known Toxicity</td>
</tr>
<tr>
<td>C (mg)</td>
<td>45</td>
<td>250-4000</td>
<td>100-10,000</td>
<td>Over 10,000</td>
<td>50,000-100,000</td>
</tr>
<tr>
<td>Magnesium (mg)</td>
<td>300</td>
<td>400-800</td>
<td>400-1200</td>
<td>None Known</td>
<td>Over 15,000</td>
</tr>
<tr>
<td>Copper (mg)</td>
<td>2-3</td>
<td>2-5</td>
<td>2-5</td>
<td>Over 7</td>
<td>Over 250</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>18</td>
<td>10-25</td>
<td>10-300</td>
<td>Over 50</td>
<td>Over 100</td>
</tr>
<tr>
<td>Manganese (mg)</td>
<td>2.5-5</td>
<td>3-20</td>
<td>10-100</td>
<td>Over 200</td>
<td>Over 1000</td>
</tr>
<tr>
<td>Zinc (mg)</td>
<td>15</td>
<td>15-30</td>
<td>25-200</td>
<td>Over 200</td>
<td>Over 1000</td>
</tr>
</tbody>
</table>

**Note:** The values listed are recommendations for adults. Certain doses may be higher or lower depending on individual needs. Please consult with a healthcare professional before starting any supplement regime.
sometimes just doubling the dose can prove poisonous, or even fatal.

If you are uncertain about safety, the accompanying chart will tell you the minimum RDA and the optimum amounts for improving and maximizing health, the treatment dosages used by orthomolecular physicians to treat various conditions, the dosages which can create symptom side effects, and the amounts which can be toxic if indeed a substance has a toxic potential.

The dose ranges of the treatment program recommended in this book are far below any of the side effect amounts and on the low side of the treatment dosages.

*Remember, balance is vital.* You do not need to take more unless there is an indication of the necessity. "If some is good, then more is better" does not apply.

Certain individuals may be allergic to some vitamins because they are manufactured with starches, fillers, dyes, yeasts, corn, sugars and so on. This reaction is different from a reaction to excessive dosage. If you know you have allergies, use special hypoallergenic products. Only rarely are individuals allergic to the actual vitamin itself.

If you have any serious medical illness, then when supplementing any more than the lowest level of the treatment doses listed in this table consult a nutritionally-oriented physician of any specialty whose subspecialty is "orthomolecular or nutritionally-oriented medicine."
8 Other Food-Mood Connections

Our nutrient program has had satisfying and consistent results, but it will not work as well if your other health habits are physically or psychologically damaging. In addition, though nutritional status is important, there are other factors that can influence your mood and engender depressed feelings, including excess sugar, hypoglycemic reactions to sugar and refined carbohydrates, vegetarianism and food sensitivities or allergies.

Sugar Is Not So Sweet

I don’t talk about sugar from any lifelong position of abstinence. I used to live on Hostess Pies, Snickers, Mars Bars, Reese’s Peanut Butter Cups, chocolate bridge mix, See’s Candies, Swensen’s peanut butter chocolate ice cream, and Coca-Cola. I often used to bake five dozen chocolate chip cookies, eat half the batter while they were cooking, and then finish off the cookies in a few days—with a “little” sharing, of course. And while “dieting,” I slinked down to the vending machines in the medical school dormitory basement to get my nightly fix. No wonder I was depressed.

Because of such excesses I am now limited in what I can eat, and probably forever. Even small amounts of sugar can spell trouble for people who are allergic, diabetic, hypoglycemic or yeast-infection prone, but excess sugar can create a real health danger to anyone. Many people are hooked on sugar and, unknowingly, profoundly influenced by it.

Now, what constitutes “excess”? The average American consumes 126.8 pounds yearly, over a third of a pound daily! This consumption is up 11 pounds per year from what it was a decade ago. Sugar constitutes 25 percent of our daily calories, and sweet drinks make up 25 percent of that sugar intake.

Most of us are not aware that our intake is this high, as we are surrounded by hidden as well as overt sugars. If you read labels, you’ll notice how omnipresent sugar is (and it isn’t even included on all labels). Remember that there are many other names for sugar—corn syrup, corn solids, fructose, sucrose, glucose, dextrose, etc. Try buying a cereal without sugar and you’ll likely only be left with a choice of shredded wheat and grape nuts; try buying sugar-free canned or frozen vegetables and you’ll be severely limited in your choice; even many already sweet fruit juices are sweetened; note all the loaves of bread with added sugar; the canned beans; the sauces and ketchups—sugar, sugar everywhere. What helps sell sugar and what is particularly alarming is that the taste, as well as the effects, have proven addictive. Even laboratory animals will choose sugared food and water over their non-sweetened counterparts when given the option.

The case seems clear, the evidence overwhelming; sugar is one of the most powerful common foods capable of affecting our minds and our moods. A
Other
Food-Mood Connections

Our nutrient program has had satisfying and consistent results, but it will not work as well if your other health habits are physically or psychologically damaging. In addition, though nutritional status is important, there are other factors that can influence your mood and engender depressed feelings, including excess sugar, hypoglycemic reactions to sugar and refined carbohydrates, vegetarianism and food sensitivities or allergies.

Sugar Is Not So Sweet

I don't talk about sugar from any lifelong position of abstinence. I used to live on Hostess Pies, Snickers, Mars Bars, Reese's Peanut Butter Cups, chocolate bridge mix, See's Candies, Swensen's peanut butter chocolate ice cream, and Coca-Cola. I often used to bake five dozen chocolate chip cookies, eat half the batter while they were cooking, and then finish off the cookies in a few days—with a "little" sharing, of course. And while "dieting," I slinked down to the vending machines in the medical school dormitory basement to get my nightly fix. No wonder I was depressed.

Because of such excesses I am now limited in what I can eat, and probably forever. Even small amounts of sugar can spell trouble for people who are allergic, diabetic, hypoglycemic or yeast-infection prone, but excess sugar can create a real health danger to anyone. Many people are hooked on sugar and, unknowingly, profoundly influenced by it.

Now, what constitutes "excess"? The average American consumes 126.8 pounds yearly, over a third of a pound daily! This consumption is up 11 pounds per year from what it was a decade ago. Sugar constitutes 25 percent of our daily calories, and sweet drinks make up 25 percent of that sugar intake.

Most of us are not aware that our intake is this high, as we are surrounded by hidden as well as overt sugars. If you read labels, you'll notice how omnipresent sugar is (and it isn't even included on all labels). Remember that there are many other names for sugar—corn syrup, corn solids, fructose, sucrose, glucose, dextrose, etc. Try buying a cereal without sugar and you'll likely only be left with a choice of shredded wheat and grape nuts; try buying sugar-free canned or frozen vegetables and you'll be severely limited in your choice; even many already sweet fruit juices are sweetened; note all the loaves of bread with added sugar; the canned beans; the sauces and ketchups—sugar, sugar everywhere. What helps sell sugar and what is particularly alarming is that the taste, as well as the effects, have proven addictive. Even laboratory animals will choose sugared food and water over their non-sweetened counterparts when given the option.

The case seems clear, the evidence overwhelming; sugar is one of the most powerful common foods capable of affecting our minds and our moods. A
twelve-year-old girl was brought to me complaining of severe depression and "attacks" of anger during which she provoked and verbally assaulted her parents, and verbally and physically abused her sister. As time passed, it became clear that this behavior occurred whenever she ate sugar. As long as she refrained from sugar there were no such mood swings or angry attacks. Now she is eighteen years old and has been doing well on a nutrient program. However, she has called me with occasional relapses through our six years of knowing each other. My first question is always about sugar and each relapse turns out to have been precipitated by her returning to her sugar habit. She usually needs a few booster sessions to bolster her discipline and then does well again until the next slip.

Sugar, white flour, alcohol and other refined carbohydrates are nutritionally useless. They provide "empty" calories that can only convert to energy when certain vitamins are present. Those vitamins must be obtained from other more nutritious foods or supplements. If you indulge too many of these empty calories and not enough nutritious foods to help with their metabolism, you will create a depletion of certain vitamins. The empty calories can thus push you into a negative nutritional state.

Here is a dramatic example of an empty-calorie junk food diet and its consequences. A thirty-year-old woman came to me complaining of daily headaches and stomach pain, saying, "My mind is constantly racing. I can't fall asleep because I'm thinking about horrible things that are going to happen. I keep seeing my son in a coffin. My moods are always changing; my poor son having to deal with me, he'd be better off without me." This woman suffered from chronic anxiety interspersed with panic attacks, confusion, restlessness, diffi-

culty concentrating, memory lapses, suicidal thoughts, dizziness, palpitations and tightness in her chest, muscle weakness, pain and cramps, and chronic fatigue.

Here is a three-day sample of her diet at the time:

<table>
<thead>
<tr>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 apple</td>
<td>1 cup of coffee</td>
<td>1 cup of coffee</td>
</tr>
<tr>
<td>2 chocolate chip cookies</td>
<td>2 donuts</td>
<td>2 slices of American cheese</td>
</tr>
<tr>
<td>3 slices of American cheese</td>
<td>1 hamburger patty</td>
<td>1 chicken pie</td>
</tr>
<tr>
<td>1 hamburger on a plain bun</td>
<td>1 Like soda</td>
<td>1 Pepsi Free</td>
</tr>
<tr>
<td>French fries</td>
<td>1 slice of American cheese</td>
<td>potato chips</td>
</tr>
<tr>
<td>1 Pepsi Free</td>
<td>1 candy bar</td>
<td>2 bean and cheese burritos</td>
</tr>
<tr>
<td>1 Like soda</td>
<td>1 Pepsi Free some &quot;Red Hot&quot; candy</td>
<td>1 Like soda</td>
</tr>
<tr>
<td>1 bowl Rice Krispies with sugar</td>
<td>1 McDonald's McRib with french fries</td>
<td>1 candy bar</td>
</tr>
<tr>
<td>2 more Pepsi Free's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 slice of American cheese</td>
<td>1 Tab</td>
<td>1 hot dog and bun</td>
</tr>
</tbody>
</table>
A twelve-year-old girl was brought to me complaining of severe depression and "attacks" of anger during which she provoked and verbally assaulted her parents, and verbally and physically abused her sister. As time passed, it became clear that this behavior occurred whenever she ate sugar. As long as she refrained from sugar there were no such mood swings or angry attacks. Now she is eighteen years old and has been doing well on a nutrient program. However, she has called me with occasional relapses through our six years of knowing each other. My first question is always about sugar and each relapse turns out to have been precipitated by her returning to her sugar habit. She usually needs a few booster sessions to bolster her discipline and then does well again until the next slip.

Sugar, white flour, alcohol and other refined carbohydrates are nutritionally useless. They provide "empty" calories that can only convert to energy when certain vitamins are present. Those vitamins must be obtained from other more nutritious foods or supplements. If you indulge too many of these empty calories and not enough nutritious foods to help with their metabolism, you will create a depletion of certain vitamins. The empty calories can thus push you into a negative nutritional state.

Here is a dramatic example of an empty-calorie junk food diet and its consequences. A thirty-year-old woman came to me complaining of daily headaches and stomach pain, saying, "My mind is constantly racing. I can't fall asleep because I'm thinking about horrible things that are going to happen. I keep seeing my son in a coffin. My moods are always changing; my poor son having to deal with me, he'd be better off without me." This woman suffered from chronic anxiety interspersed with panic attacks, confusion, restlessness, difficulty concentrating, memory lapses, suicidal thoughts, dizziness, palpitations and tightness in her chest, muscle weakness, pain and cramps, and chronic fatigue.

Here is a three-day sample of her diet at the time:

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 apple</td>
<td>1 cup of coffee</td>
<td>1 cup of coffee</td>
</tr>
<tr>
<td>2 chocolate chip cookies</td>
<td>2 donuts</td>
<td>2 slices of American cheese</td>
</tr>
<tr>
<td>3 slices of American cheese</td>
<td>1 hamburger patty</td>
<td>1 chicken pie</td>
</tr>
<tr>
<td>1 hamburger on a plain bun</td>
<td>1 Like soda</td>
<td>1 Pepsi Free</td>
</tr>
<tr>
<td>French fries</td>
<td>1 slice of American cheese</td>
<td>potato chips</td>
</tr>
<tr>
<td>1 Pepsi Free</td>
<td>1 candy bar</td>
<td>2 bean and cheese burritos</td>
</tr>
<tr>
<td>1 Like soda</td>
<td>1 Pepsi Free some &quot;Red Hot&quot;</td>
<td>1 Pepsi Free</td>
</tr>
<tr>
<td>1 bowl Rice Krispies with sugar</td>
<td></td>
<td>1 Like soda</td>
</tr>
<tr>
<td>2 more Pepsi Free's</td>
<td>1 McDonald's McRib with french fries</td>
<td></td>
</tr>
<tr>
<td>1 slice of American cheese</td>
<td>1 Tab</td>
<td>1 candy bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hot dog and bun</td>
</tr>
</tbody>
</table>

This type of eating pattern had continued for a long time. Where is her daily protein, her vegetables and fruit? Her diet only consistently contained one of the five basic food groups, grains. No wonder she felt so terrible, and yet was too discouraged to make any lasting changes. She might try to eat healthfully for a few days, then when she didn't notice an immediate, significant improvement, she lapsed into her old habits. It would take a good six months or a year in this...
woman’s case to make up for or undo ten years of deprivation.

Her diet is hardly unusual. I am often appalled by the lists of food intake which people bring to me. Sometimes I wonder how they can live and move at all. And there is no greater offender than sugar in these harmful diets.

Put simply, sugar is a drug which, besides being addictive, is actually toxic to our systems in large amounts. Vitamins B₁, B₂ and B₃ are needed to detoxify and metabolize it. Our bodies particularly need vitamin B₁ to metabolize sugar. The more sugar we eat, the less vitamin B₁ we have, and fatigue, depression and other problems follow. The damage and symptoms are directly proportionate to our indulgence and to whether or not we use supplements or get enough B₁ and B complex vitamins some other way. Sugar also leads to depression by increasing the magnesium and calcium excretion in our urine and by decreasing the overall magnesium absorption from our food.

Excess sugar may also contribute to amino acid deficiencies, because research in animals indicates that sugar and amino acids compete for absorption in the intestines. Specifically, the influx of the amino acids tryptophan and phenylalanine are inhibited by sugars. Therefore it may be unwise to eat sugar and protein at the same time. High sugar intake also undermines your immune system: it has been shown to decrease the white blood cell count and to lower resistance to colds, flu and other infections.

HYPOGLYCEMIA

Hypoglycemia is a condition of abnormal sugar metabolism resulting in low blood sugar, which many experts believe may be brought about in certain susceptible individuals by the ingestion of too much sugar or too many refined carbohydrates.

Is hypoglycemia a hype? Some doctors think so, but I don’t. What makes it so controversial? One reason is that, as with most illnesses with multiple yet vague symptoms, doctors tend to get uneasy. The temptation is to pass the symptoms off as obsession, hypochondriasis, a bad marriage... If hypoglycemia had a list of clear-cut, well-defined physical manifestations, it would be more readily accepted and agreed upon as a specific malady in need of treatment. On the other hand, hypoglycemia may have been over-diagnosed, too often passed off as the cause of all sorts of vague symptoms by a public made aware of hypoglycemia.

But we are now discovering that certain mental symptoms and diseases are indeed associated with altered or disturbed glucose (sugar) utilization in the brain. There are computerized brain X-ray tests called positron emission tomographic (PET) brain scans which measure glucose utilization in the brain. Depressed patients show an overall reduction in glucose metabolism that is most marked across the front and on the left side of their brains. Since the B vitamins are necessary for sugar utilization and metabolism, could it be that B vitamin deficiencies are actually contributing to this faulty glucose metabolism?

PET brain scans of schizophrenics, depressives and other diagnostic groups have helped to substantiate the effect that low blood sugar or rapidly changing sugar levels have on brain function and thus on emotional states, moods and perceptions. The proper concentration of sugar (glucose) in the proper areas of the brain at the right time is an essential component of good mental and physical health, but eating
woman's case to make up for or undo ten years of deprivation.

Her diet is hardly unusual. I am often appalled by the lists of food intake which people bring to me. Sometimes I wonder how they can live and move at all. And there is no greater offender than sugar in these harmful diets.

Put simply, sugar is a drug which, besides being addictive, is actually toxic to our systems in large amounts. Vitamins B₁, B₂, and B₃ are needed to detoxify and metabolize it. Our bodies particularly need vitamin B₁ to metabolize sugar. The more sugar we eat, the less vitamin B₁ we have, and fatigue, depression, and other problems follow. The damage and symptoms are directly proportionate to our indulgence and to whether or not we use supplements or get enough B₁ and B complex vitamins some other way. Sugar also leads to depression by increasing the magnesium and calcium excretion in our urine and by decreasing the overall magnesium absorption from our food.

Excess sugar may also contribute to amino acid deficiencies, because research in animals indicates that sugar and amino acids compete for absorption in the intestines. Specifically, the influx of the amino acids tryptophan and phenylalanine are inhibited by sugars. Therefore it may be unwise to eat sugar and protein at the same time. High sugar intake also undermines your immune system: it has been shown to decrease the white blood cell count and to lower resistance to colds, flu and other infections.

**Hypoglycemia**

Hypoglycemia is a condition of abnormal sugar metabolism resulting in low blood sugar, which many

experts believe may be brought about in certain susceptible individuals by the ingestion of too much sugar or too many refined carbohydrates.

Is hypoglycemia a hype? Some doctors think so, but I don’t. What makes it so controversial? One reason is that, as with most illnesses with multiple yet vague symptoms, doctors tend to get uneasy. The temptation is to pass the symptoms off as obsession, hypochondriasis, a bad marriage. . . . If hypoglycemia had a list of clear-cut, well-defined physical manifestations, it would be more readily accepted and agreed upon as a specific malady in need of treatment. On the other hand, hypoglycemia may have been over-diagnosed, too often passed off as the cause of all sorts of vague symptoms by a public made aware of hypoglycemia.

But we are now discovering that certain mental symptoms and diseases are indeed associated with altered or disturbed glucose (sugar) utilization in the brain. There are computerized brain X ray tests called positron emission tomographic (PET) brain scans which measure glucose utilization in the brain. Depressed patients show an overall reduction in glucose metabolism that is most marked across the front and on the left side of their brains. Since the B vitamins are necessary for sugar utilization and metabolism, could it be that B vitamin deficiencies are actually contributing to this faulty glucose metabolism?

PET brain scans of schizophrenics, depressives and other diagnostic groups have helped to substantiate the effect that low blood sugar or rapidly changing sugar levels have on brain function and thus on emotional states, moods and perceptions. The proper concentration of sugar (glucose) in the proper areas of the brain at the right time is an essential component of good mental and physical health, but eating
more sugar to create sugar in your brain is not the answer and in the long-term can actually create less.

Here's why: sugar rapidly absorbs into your system and your body reacts or overreacts to this with an outpouring of insulin from your pancreas. This causes the level of blood sugar to go down. Fine tuning of the sugar level with just the right amount of insulin can be difficult: if the blood sugar drops too low, the body pours out substances called growth hormone, glucagon, cortisol and adrenaline to push it back up; this can then cause a further release of insulin, and the sequence bounces back and forth until a balance is established.

Your liver, pituitary body, pancreas and adrenal gland are all involved in this process of your body's efforts to achieve blood sugar balance. Problems can develop when they are overworked and taxed by a regularly incoming sugar load or by sporadic excessive sugar. High insulin output can also create major changes in brain chemistry as well as brain swelling.

Sufficient quantities of the proper nutrients can promote proper glandular function and hormone production and otherwise aid in the metabolism of the sugar. Eliminating caffeine also helps to level out your blood sugar.

If you have early morning, or before lunch, or late afternoon fatigue which is relieved by a seeming "pickup" of sugar and you find yourself reaching for candy bars, sodas, or other quick sugar fixes at those times, suspect a problem. More than 50 percent of patients who go to a doctor complain of fatigue as one of their symptoms. The most common cause is eating sugar.

The following is a list of symptoms induced by rapidly fluctuating or low blood sugar, that is, by hypoglycemia. Please note that many of these symptoms also occur with depression. Those symptoms marked with an asterisk more clearly indicate blood sugar problems and help to differentiate the two.

### Symptoms of Blood Sugar Instability

1. Depression
2. Nervousness
3. Irritability, anger, rage attacks
4. Exhaustion
5. *Faintness, dizziness
6. *Tremor, cold sweats
7. Weak spells, especially between meals
8. Headache, especially in the morning
9. Digestive disturbances
10. Forgetfulness
11. Insomnia
12. Nighttime awakening, inability to return to sleep
13. Constant worrying
14. Unprovoked anxieties
15. Mental confusion
16. *Internal trembling
17. Palpitation of the heart
18. *Rapid pulse
19. Muscle pains
20. Numbness
21. Social withdrawal
22. Antisocial behavior
23. Indecisiveness
24. Crying spells
25. Lack of sex drive
26. Allergies
27. *Uncoordination
28. *Leg cramps
29. Lack of concentration
30. *Blurred vision
31. *Twitching, or jerking of muscles
32. Gasping for breath
more sugar to create sugar in your brain is not the answer and in the long-term can actually create less.

Here's why: sugar rapidly absorbs into your system and your body reacts or overreacts to this with an outpouring of insulin from your pancreas. This causes the level of blood sugar to go down. Fine tuning of the sugar level with just the right amount of insulin can be difficult: if the blood sugar drops too low, the body pours out substances called growth hormone, glucagon, cortisol and adrenaline to push it back up; this can then cause a further release of insulin, and the sequence bounces back and forth until a balance is established.

Your liver, pituitary body, pancreas and adrenal gland are all involved in this process of your body's efforts to achieve blood sugar balance. Problems can develop when they are overworked and taxed by a regularly incoming sugar load or by sporadic excessive sugar. High insulin output can also create major changes in brain chemistry as well as brain swelling.

Sufficient quantities of the proper nutrients can promote proper glandular function and hormone production and otherwise aid in the metabolism of the sugar. Eliminating caffeine also helps to level out your blood sugar.

If you have early morning, or before lunch, or late afternoon fatigue which is relieved by a seeming "pickup" of sugar and you find yourself reaching for candy bars, sodas, or other quick sugar fixes at those times, suspect a problem. More than 50 percent of patients who go to a doctor complain of fatigue as one of their symptoms. The most common cause is eating sugar.

The following is a list of symptoms induced by rapidly fluctuating or low blood sugar, that is, by hypoglycemia. Please note that many of these symptoms also occur with depression. Those symptoms marked with an asterisk more clearly indicate blood sugar problems and help to differentiate the two.

**Symptoms of Blood Sugar Instability**

1. Depression
2. Nervousness
3. Irritability, anger, rage attacks
4. Exhaustion
5. *Fatigue, dizziness*
6. *Tremor, cold sweats*
7. *Weak spells, especially between meals*
8. Headache, especially in the morning
9. Digestive disturbances
10. Forgetfulness
11. Insomnia
12. Nighttime awakening, inability to return to sleep
13. Constant worrying
14. Unprovoked anxieties
15. Mental confusion
16. *Internal trembling*
17. Palpitation of the heart
18. *Rapid pulse*
19. Muscle pains
20. Numbness
21. Social withdrawal
22. Antisocial behavior
23. Indecisiveness
24. Crying spells
25. Lack of sex drive
26. Allergies
27. *Uncoordination*
28. *Leg cramps*
29. *Lack of concentration*
30. *Blurred vision*
31. *Twitching, or jerking of muscles*
32. *Gasping for breath*
*33. Itching of skin
*34. Feeling like you can't get enough air
*35. Staggering
36. Sighing and yawning
37. Impotence
*38. Unconsciousness
39. Night terrors
40. Nightmares
41. Phobias, fears
42. Suicidal ideas
43. Nervous breakdown
*44. Convulsions
*45. Craving for sweets
*46. Blackouts
*47. Light clammy perspiration
*48. Fluctuating mood and personality throughout the day
*49. Feeling better right after eating and feeling worse two to six hours after eating or upon arising in the morning

If you regularly eat sugar, drink alcohol, have a family history of sugar-associated illnesses, and have at least ten of these symptoms (especially if many are with the asterisk), read Fighting Depression, by Harvey Ross, M.D., and proceed with appropriate hypoglycemia testing, in addition to—not in place of—following the program in this book. Refer to the appendix for further information on hypoglycemia.

Vegetarianism

Strict vegetarianism is not without risks. It takes a conscientious person with a fair amount of nutritional sophistication to follow this lifestyle successfully. Those who omit dairy products and eggs are especially vulnerable to long-term difficulties. Vegetarians are particularly prone to develop iron, vitamin B₁₂ and amino acid deficiencies. All of these can be associated with low energy and low moods.

Fish, fowl, meats and cottage cheese are the primary single foods supplying balanced amino acids. Most vegetarian foods do not supply such a balance on their own. They must be intelligently combined to provide the nutritional equal to what you would get from a meat and dairy diet. Popular books such as Diet For a Small Planet, by Frances Moore Lappé, can help you to ensure a properly balanced amino acid intake.

If you are strictly vegetarian be sure to take supplemental iron and vitamin B₁₂ as mentioned on page 57, in addition to the basic nutrient program. It would also be wise to get a complete blood count, blood vitamin B₁₂ level, and blood amino acid analysis every few years.

Allergies or Sensitivities

Over the past several years, there has been a lot of controversy about food allergies or sensitivities, how to detect them and whether, in fact, they exist. To me, this is somewhat like refusing to accept the fact that the sun rises daily, whether or not you see it that day. Anyone who has suffered from sensitivities to food will have trouble understanding the medical establishment's disagreement on this issue.

Such allergies not only exist but are increasing. The combination of stress, nutrient deficiencies and exposure to chemicals in food, water and air, as well as recreational drug use and abuse, can alter the immune system and cause overreaction to many substances, including food.

The most common foods producing reactions are wheat, corn, coffee, sugar, yeast, eggs, soy, beef, pork
*33. Itching of skin
*34. Feeling like you can't get enough air
*35. Staggering
*36. Sighing and yawning
*37. Impotence
*38. Unconsciousness
39. Night terrors
40. Nightmares
41. Phobias, fears
42. Suicidal ideas
43. Nervous breakdown
*44. Convulsions
*45. Craving for sweets
*46. Blackouts
*47. Light clammy perspiration
*48. Fluctuating mood and personality throughout the day
*49. Feeling better right after eating and feeling worse two to six hours after eating or upon arising in the morning

If you regularly eat sugar, drink alcohol, have a family history of sugar-associated illnesses, and have at least ten of these symptoms (especially if many are with the asterisk), read Fighting Depression, by Harvey Ross, M.D., and proceed with appropriate hypoglycemia testing, in addition to—not in place of—following the program in this book. Refer to the appendix for further information on hypoglycemia.

**Vegetarianism**

Strict vegetarianism is not without risks. It takes a conscientious person with a fair amount of nutritional sophistication to follow this lifestyle successfully. Those who omit dairy products and eggs are especially vulnerable to long-term difficulties. Vegetarians are particularly prone to develop iron, vitamin B₁₂ and amino acid deficiencies. All of these can be associated with low energy and low moods.

Fish, fowl, meats and cottage cheese are the primary single foods supplying balanced amino acids. Most vegetarian foods do not supply such a balance on their own. They must be intelligently combined to provide the nutritional equal to what you would get from a meat and dairy diet. Popular books such as Diet For a Small Planet, by Frances Moore Lappé, can help you to ensure a properly balanced amino acid intake.

If you are strictly vegetarian be sure to take supplemental iron and vitamin B₁₂ as mentioned on page 57, in addition to the basic nutrient program. It would also be wise to get a complete blood count, blood vitamin B₁₂ level, and blood amino acid analysis every few years.

**Allergies or Sensitivities**

Over the past several years, there has been a lot of controversy about food allergies or sensitivities, how to detect them and whether, in fact, they exist. To me, this is somewhat like refusing to accept the fact that the sun rises daily, whether or not you see it that day. Anyone who has suffered from sensitivities to food will have trouble understanding the medical establishment's disagreement on this issue.

Such allergies not only exist but are increasing. The combination of stress, nutrient deficiencies and exposure to chemicals in food, water and air, as well as recreational drug use and abuse, can alter the immune system and cause overreaction to many substances, including food.

The most common foods producing reactions are wheat, corn, coffee, sugar, yeast, eggs, soy, beef, pork
and milk. Some who have symptoms from alcoholic beverages are reacting to the yeast, corn, grains, hops, grapes and so forth in these drinks.

Acute food allergies may be obvious, but chronic allergies are not so well defined. We are often "addicted" to the foods to which we are reacting negatively. As part of the allergic response, a person may be initially stimulated and may feel better for a while after eating a particular food. The negative symptoms arrive later and, since we don't associate them with the food, we get hooked on this initial stimulatory effect and eat more and more, creating a plethora of confusing symptoms.

The "target organ" is the specific part of the body affected or attacked by the allergy. With emotional symptoms, the target organ is the brain. Why should it be exempt? Why should allergic effects be limited to the skin, with itching and hives, or to the upper respiratory system, with sneezing, hay fever and asthma, or to the gastrointestinal system, with colic, diarrhea and cramps?

Food and chemical allergies can change your emotions and cause low moods and sustained depression. They can create psychological symptoms such as the following:

<table>
<thead>
<tr>
<th>Depression</th>
<th>Poor work habits</th>
<th>Hyperactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal</td>
<td>Slurred speech</td>
<td>Restlessness</td>
</tr>
<tr>
<td>Listlessness</td>
<td>Stuttering</td>
<td>Confusion</td>
</tr>
<tr>
<td>Crying jags</td>
<td>Disorientation</td>
<td>Tension</td>
</tr>
<tr>
<td>Mental dullness</td>
<td>Mental lethargy</td>
<td>Silliness</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Difficulty concentrating</td>
<td>Stuporousness</td>
</tr>
<tr>
<td>Panic attacks</td>
<td>Memory loss</td>
<td>False beliefs</td>
</tr>
<tr>
<td>Irritability</td>
<td>Indifference</td>
<td>Delusions</td>
</tr>
<tr>
<td>Aggressive behavior</td>
<td>Poor comprehension</td>
<td>Hallucinations</td>
</tr>
<tr>
<td>Anger</td>
<td>Excessive daydreaming</td>
<td>Suicidal feelings</td>
</tr>
<tr>
<td>Learning disabilities</td>
<td>Negativity</td>
<td></td>
</tr>
</tbody>
</table>

The Way Up From Down

Moderate and variable allergies can produce fluctuating, unpredictable moods. Often they are bearable because the fluctuating course does give times of relief. Sometimes they are not bearable.

A certain subgroup of allergic people are what are called "universal reactors." They have become allergic to so many substances in the air and the food supply that their life is severe. They may suffer so wide a range of physical and psychological symptoms that they find relief only in isolation units in hospitals or in natural settings far from most of the offending agents.

How Can You Tell If You Are Reacting Negatively to Food?

Unfortunately, allergy detection can be bewildering and complex, because people's reactions are inconsistent. Whether or not you react at any given time may depend upon how much stress you're experiencing, your total biochemical and nutritional state, and how many other simultaneous inhalant, chemical and food allergies you are exposed to. This is described as the "total allergic load." Eating three foods you are sensitive to may not create a problem, but adding the fourth overwhelms your system and you get symptoms. Or, if you are already reacting to mold and pollen, and then you add the wrong food, you feel worse.

Researchers are constantly working to discover new and better ways to measure adverse reactions to foods and inhalants. Strictly speaking, an allergy involves an immune globulin E (IGE) reaction, an immediate reaction directly linked to the food intake as, for example, blisters following the eating of shellfish or coughing right after eating wheat.
and milk. Some who have symptoms from alcoholic beverages are reacting to the yeast, corn, grains, hops, grapes and so forth in these drinks.

Acute food allergies may be obvious, but chronic allergies are not so well defined. We are often "addicted" to the foods to which we are reacting negatively. As part of the allergic response, a person may be initially stimulated and may feel better for a while after eating a particular food. The negative symptoms arrive later and, since we don't associate them with the food, we get hooked on this initial stimulatory effect and eat more and more, creating a plethora of confusing symptoms.

The "target organ" is the specific part of the body affected or attacked by the allergy. With emotional symptoms, the target organ is the brain. Why should it be exempt? Why should allergic effects be limited to the skin, with itching and hives, or to the upper respiratory system, with sneezing, hay fever and asthma, or to the gastrointestinal system, with colic, diarrhea and cramps?

Food and chemical allergies can change your emotions and cause low moods and sustained depression. They can create psychological symptoms such as the following:

<table>
<thead>
<tr>
<th>Depression</th>
<th>Poor work habits</th>
<th>Hyperactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal</td>
<td>Slurred speech</td>
<td>Restlessness</td>
</tr>
<tr>
<td>Llisteness</td>
<td>Stuttering</td>
<td>Confusion</td>
</tr>
<tr>
<td>Crying jags</td>
<td>Disorientation</td>
<td>Tension</td>
</tr>
<tr>
<td>Mental dullness</td>
<td>Mental lethargy</td>
<td>Silliness</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Difficulty conce.</td>
<td>Stuporousness</td>
</tr>
<tr>
<td>Panic attacks</td>
<td>Memory loss</td>
<td>False beliefs</td>
</tr>
<tr>
<td>Irritability</td>
<td>Indifference</td>
<td>Delusions</td>
</tr>
<tr>
<td>Aggressive behavior</td>
<td>Poor comprehension</td>
<td>Hallucinations</td>
</tr>
<tr>
<td>Anger</td>
<td>Excessive daydreaming</td>
<td>Suicidal feelings</td>
</tr>
<tr>
<td>Learning disabilities</td>
<td>Negativity</td>
<td></td>
</tr>
</tbody>
</table>

Moderate and variable allergies can produce fluctuating, unpredictable moods. Often they are bearable because the fluctuating course does give times of relief. Sometimes they are not bearable.

A certain subgroup of allergic people are what are called "universal reactors." They have become allergic to so many substances in the air and the food supply that their life is severe. They may suffer so wide a range of physical and psychological symptoms that they find relief only in isolation units in hospitals or in natural settings far from most of the offending agents.

HOW CAN YOU TELL IF YOU ARE REACTING NEGATIVELY TO FOOD?

Unfortunately, allergy detection can be bewildering and complex, because people's reactions are inconsistent. Whether or not you react at any given time may depend upon how much stress you're experiencing, your total biochemical and nutritional state, and how many other simultaneous inhalant, chemical and food allergies you are exposed to. This is described as the "total allergic load." Eating three foods you are sensitive to may not create a problem, but adding the fourth overwhelms your system and you get symptoms. Or, if you are already reacting to mold and pollen, and then you add the wrong food, you feel worse.

Researchers are constantly working to discover new and better ways to measure adverse reactions to foods and inhalants. Strictly speaking, an allergy involves an immune globulin E (IGE) reaction, an immediate reaction directly linked to the food intake as, for example, blisters following the eating of shellfish or coughing right after eating wheat.
Other adverse reactions to food, mediated by immune globulins G, A and M, are called "sensitivities" and create delayed reactions, with the symptoms occurring anywhere from an hour to three days later. Irritability and muscle tension the day after eating a lot of wheat is an example. If the offending food is eaten daily, producing a gradual buildup and overlap of symptoms, it is particularly difficult to pinpoint the offending agent. Yet the bottom line is the same—unpleasant reactions to certain foods. You can track down your problem by trying a food-mood diary. Keep a list of what you eat, at what times, and of what moods follow and when. If you do this for a while, you may notice the emergence of certain patterns.

Fasting: under a physician's supervision, try a program of fasting and drinking only water for a few days. If you feel much better, part of your symptoms are probably reactions to food. Do not fast if you are hypoglycemic or diabetic.

You might try to stop eating all the foods you regularly use and eat other less common foods. Do not repeat any food more often than every fourth day. If you feel better on this program, food reactions were contributing to your symptoms.

Your doctor may wish to try one of a wide range of tests for allergies and sensitivities. Allergy detection tests are rapidly changing. Ask your doctor for the most up-to-date determination available in your area. Some of these tests are listed in the Appendix.

There are traditional allergists, and there is a new medical specialty called clinical ecology. These doctors are devoted to the research and treatment of multiple allergies related to our changing chemical environment and usually employ a different approach from what is considered traditional.

If you have any family history of allergies or can detect any fluctuating mood changes which seem to connect to food intake, look to food as part of your problem. If your mood states shift a lot, or if you feel better when you don't eat or feel best when fasting, you should be checked for allergies. If you have a depression which hasn't been responsive to usual treatments, suspect allergies.

Allergy sufferers respond well to a balanced hypoallergenic nutrient-supplement program. They have responded well to tyrosine, partially because it helps to fortify the immune system and perhaps partially because one breakdown product of tyrosine is epi-nephrine, which has traditionally been used to treat many allergy victims.

If food reactions are influencing your moods, the amino acid program will work best if coupled with a three month abstinence from the offending foods and a gradual reassimilation of the foods into your diet. See the bibliography for books that will be helpful.
Other adverse reactions to food, mediated by immune globulins G, A and M, are called "sensitivities" and create delayed reactions, with the symptoms occurring anywhere from an hour to three days later. Irritability and muscle tension the day after eating a lot of wheat is an example. If the offending food is eaten daily, producing a gradual buildup and overlap of symptoms, it is particularly difficult to pinpoint the offending agent. Yet the bottom line is the same—unpleasant reactions to certain foods. You can track down your problem by trying a food-mood diary. Keep a list of what you eat, at what times, and of what moods follow and when. If you do this for a while, you may notice the emergence of certain patterns.

Fasting: under a physician's supervision, try a program of fasting and drinking only water for a few days. If you feel much better, part of your symptoms are probably reactions to food. Do not fast if you are hypoglycemic or diabetic.

You might try to stop eating all the foods you regularly use and eat other less common foods. Do not repeat any food more often than every fourth day. If you feel better on this program, food reactions were contributing to your symptoms.

Your doctor may wish to try one of a wide range of tests for allergies and sensitivities. Allergy detection tests are rapidly changing. Ask your doctor for the most up-to-date determination available in your area. Some of these tests are listed in the Appendix.

There are traditional allergists, and there is a new medical specialty called clinical ecology. These doctors are devoted to the research and treatment of multiple allergies related to our changing chemical environment and usually employ a different approach from what is considered traditional.

If you have any family history of allergies or can detect any fluctuating mood changes which seem to connect to food intake, look to food as part of your problem. If your mood states shift a lot, or if you feel better when you don't eat or feel best when fasting, you should be checked for allergies. If you have a depression which hasn't been responsive to usual treatments, suspect allergies.

Allergy sufferers respond well to a balanced hypoallergenic nutrient-supplement program. They have responded well to tyrosine, partially because it helps to fortify the immune system and perhaps partially because one breakdown product of tyrosine is epinephrine, which has traditionally been used to treat many allergy victims.

If food reactions are influencing your moods, the amino acid program will work best if coupled with a three month abstinence from the offending foods and a gradual reassimilation of the foods into your diet. See the bibliography for books that will be helpful.
Life Habits and Exposures

Many of us regularly use substances that can add to chemical disequilibrium and therefore adversely affect our moods. These include caffeine, alcohol, cocaine, tobacco and some prescription medicines. They are prevalent in our culture, are part of our daily activities, and can undermine the effectiveness of the amino acid program described in this book.

Caffeine

Caffeine is the most widely used drug in the world, and is popular because it is mentally stimulating.

It is found in coffee, tea, soft drinks and some over-the-counter pain pills, and in the energy producer “Guarana,” which is sold in health food stores. Very recently, cola replaced coffee as the number one source of caffeine intake in our country. This is especially worrisome because children, who consume so much of these beverages, are very susceptible to the adverse effects of caffeine.

Caffeine is a potent, addicting drug. Abrupt discontinuance may cause headaches and other withdrawal symptoms. Caffeine use affects your brain, nerves, heart, circulation, digestion, the release of adrenaline from your adrenal glands, and the degree of tension in your muscles.

It can adversely affect certain medical conditions and should be entirely avoided in the following circumstances: high blood pressure or heart irregularities; insomnia and anxiety; ulcers, gastritis, or other stomach problems, because it stimulates gastric acid secretion; pregnancy, because it has been associated with birth defects and abnormal pregnancies; hypoglycemia; fibrocystic breast disease; and pancreatic cancer.

Small doses of 65 to 130 mg enhance physical and mental performance and induce alertness, wakefulness, talkativeness and water elimination. Larger doses, over 150 to 250 mg, can produce toxic effects including insomnia, anxiety, panic attacks, restlessness, irritability, delirium, ringing in the ears, flashes of light, gastrointestinal disturbances, tense or trembling muscles, fast or irregular heart beat, low-grade fever, headaches, fatigue, dizziness, weakness, and mood fluctuations with depression.

Depending on your weight and associated health conditions, your daily intake should not exceed 150 to 200 mg. You can use the caffeine-free alternatives when you have reached your self-assigned quota.

Caffeine and the Brain Amines

Psychiatrists are seeing the toxic effects of caffeine enough to have included a diagnosis of caffeine intoxication, or “caffeinism,” in the diagnostic manual (DSM-III).
Life Habits and Exposures

Many of us regularly use substances that can add to chemical disequilibrium and therefore adversely affect our moods. These include caffeine, alcohol, cocaine, tobacco and some prescription medicines. They are prevalent in our culture, are part of our daily activities, and can undermine the effectiveness of the amino acid program described in this book.

Caffeine

Caffeine is the most widely used drug in the world, and is popular because it is mentally stimulating.

It is found in coffee, tea, soft drinks and some over-the-counter pain pills, and in the energy producer "Guarana," which is sold in health food stores. Very recently, colas replaced coffee as the number one source of caffeine intake in our country. This is especially worrisome because children, who consume so much of these beverages, are very susceptible to the adverse effects of caffeine.

Caffeine is a potent, addicting drug. Abrupt discontinuance may cause headaches and other withdrawal symptoms. Caffeine use affects your brain, nerves, heart, circulation, digestion, the release of adrenaline from your adrenal glands, and the degree of tension in your muscles.

It can adversely affect certain medical conditions and should be entirely avoided in the following circumstances: high blood pressure or heart irregularities; insomnia and anxiety; ulcers, gastritis, or other stomach problems, because it stimulates gastric acid secretion; pregnancy, because it has been associated with birth defects and abnormal pregnancies; hypoglycemia; fibrocystic breast disease; and pancreatic cancer.

Small doses of 65 to 130 mg enhance physical and mental performance and induce alertness, wakefulness, talkativeness and water elimination. Larger doses, over 150 to 250 mg, can produce toxic effects including insomnia, anxiety, panic attacks, restlessness, irritability, delirium, ringing in the ears, flashes of light, gastrointestinal disturbances, tense or trembling muscles, fast or irregular heart beat, low-grade fever, headaches, fatigue, dizziness, weakness, and mood fluctuations with depression.

Depending on your weight and associated health conditions, your daily intake should not exceed 150 to 200 mg. You can use the caffeine-free alternatives when you have reached your self-assigned quota.

Caffeine and the Brain Amines

Psychiatrists are seeing the toxic effects of caffeine enough to have included a diagnosis of caffeine intoxication, or "caffeinism," in the diagnostic manual (DSM-III).
**Average Caffeine Content of Beverages**

<table>
<thead>
<tr>
<th></th>
<th>Caffeine/Oz</th>
<th>8 Oz Cup</th>
<th>12 Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed Coffee</td>
<td>15–30 mg</td>
<td>120–240 mg</td>
<td></td>
</tr>
<tr>
<td>Instant Coffee</td>
<td>13–20 mg</td>
<td>104–160 mg</td>
<td></td>
</tr>
<tr>
<td>Tea</td>
<td>2–10 mg</td>
<td>16–80 mg</td>
<td></td>
</tr>
<tr>
<td>Over the counter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulants:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain Dew</td>
<td>50 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tab</td>
<td>41 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet Shasta Cola</td>
<td>38 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shasta Cola</td>
<td>38 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunkist Orange</td>
<td>38 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Pepper</td>
<td>37 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pepsi-Cola</td>
<td>35 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC Cola</td>
<td>34 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>32 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet Pepsi</td>
<td>32 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pepsi Light</td>
<td>31 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>King Cola</td>
<td>29 mg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Caffeine stimulates the release of norepinephrine and other brain amines. This release takes place in the brain and body, and is the reason a small amount of caffeine may give a lift. Chronic use of larger amounts will result in depletion of the amines unless there are plenty of precursors for replacement. Under the conditions of depletion, a caffeine user will progress to feeling nervous and fatigued.

Caffeine also importantly affects mood by interfering with vitamin B₁ absorption and metabolism. Thus, chronic high intake could ultimately result in a vitamin B₁ deficiency.

One study also presented evidence that 300 mg of caffeine caused a 50 percent increase in the loss of magnesium (which is related to depression) and a 100 percent increase in the loss of calcium and sodium in the urine. Dietary magnesium and calcium intakes are often low anyway, so caffeine adds an additional mineral-exhausting stress to your system.

Aside from the problems of caffeine, coffee and tea significantly inhibit iron absorption when taken with a meal or up to one hour following a meal. Tea blocked iron intake by 87 percent in studies of the absorption of radioactive iron. Since low iron can contribute to depression, this is another mood altering hazard of these popular drinks.

I always ask my patients about their use of caffeine and the importance of doing this was underscored when a woman visiting the United States from her native Japan came to see me. Her complaints were depression, withdrawal, insomnia, fatigue, weakness, muscle tension, irritability and racing thoughts. When we talked, I learned she owned and operated a gourmet coffee shop and drank about fifteen cups of brewed coffee daily. The primary treatment I prescribed was that she discontinue the coffee and add B vitamins; all her symptoms cleared in several weeks.

**From Booze to Blues**

Alcohol affects our moods as well as our general well-being. Alcoholism is also our nation’s number-one health problem and third largest killer. We have about twelve million alcoholics and many more million heavy drinkers, meaning they consume more than fourteen drinks a week.

Most studies indicate that more men than women are alcoholic, whereas twice as many females as males are depressed. Many of the male alcoholics
The Way Up From Down

AVERAGE CAFFEINE CONTENT OF BEVERAGES

<table>
<thead>
<tr>
<th>CAFFEINE/OZ</th>
<th>8 OZ CUP</th>
<th>12 OZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed coffee</td>
<td>15–30 mg</td>
<td>120–240 mg</td>
</tr>
<tr>
<td>Instant coffee</td>
<td>13–20 mg</td>
<td>104–160 mg</td>
</tr>
<tr>
<td>Tea</td>
<td>2–10 mg</td>
<td>16–80 mg</td>
</tr>
<tr>
<td>Over the counter stimulants:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain Dew</td>
<td>50 mg</td>
<td></td>
</tr>
<tr>
<td>Tab</td>
<td>41 mg</td>
<td></td>
</tr>
<tr>
<td>Diet Shasta Cola</td>
<td>38 mg</td>
<td></td>
</tr>
<tr>
<td>Shasta Cola</td>
<td>38 mg</td>
<td></td>
</tr>
<tr>
<td>Sunkist Orange</td>
<td>38 mg</td>
<td></td>
</tr>
<tr>
<td>Dr. Pepper</td>
<td>37 mg</td>
<td></td>
</tr>
<tr>
<td>Pepsi-Cola</td>
<td>35 mg</td>
<td></td>
</tr>
<tr>
<td>RC Cola</td>
<td>34 mg</td>
<td></td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>32 mg</td>
<td></td>
</tr>
<tr>
<td>Diet Pepsi</td>
<td>32 mg</td>
<td></td>
</tr>
<tr>
<td>Pepsi Light</td>
<td>31 mg</td>
<td></td>
</tr>
<tr>
<td>King Cola</td>
<td>29 mg</td>
<td></td>
</tr>
</tbody>
</table>


Caffeine stimulates the release of norepinephrine and other brain amines. This release takes place in the brain and body, and is the reason a small amount of caffeine may give a lift. Chronic use of larger amounts will result in depletion of the amines unless there are plenty of precursors for replacement. Under the conditions of depletion, a caffeine user will progress to feeling nervous and fatigued.

Caffeine also importantly affects mood by interfering with vitamin B₁ absorption and metabolism. Thus, chronic high intake could ultimately result in a vitamin B₁ deficiency.

One study also presented evidence that 300 mg of caffeine caused a 50 percent increase in the loss of magnesium (which is related to depression) and a 100 percent increase in the loss of calcium and sodium in the urine. Dietary magnesium and calcium intakes are often low anyway, so caffeine adds an additional mineral-exhausting stress to your system.

Aside from the problems of caffeine, coffee and tea significantly inhibit iron absorption when taken with a meal or up to one hour following a meal. Tea blocked iron intake by 87 percent in studies of the absorption of radioactive iron. Since low iron can contribute to depression, this is another mood altering hazard of these popular drinks.

I always ask my patients about their use of caffeine and the importance of doing this was underscored when a woman visiting the United States from her native Japan came to see me. Her complaints were depression, withdrawal, insomnia, fatigue, weakness, muscle tension, irritability and racing thoughts. When we talked, I learned she owned and operated a gourmet coffee shop and drank about fifteen cups of brewed coffee daily. The primary treatment I prescribed was that she discontinue the coffee and add B vitamins; all her symptoms cleared in several weeks.

From Booze to Blues

Alcohol affects our moods as well as our general well-being. Alcoholism is also our nation’s number-one health problem and third largest killer. We have about twelve million alcoholics and many more million heavy drinkers, meaning they consume more than fourteen drinks a week.

Most studies indicate that more men than women are alcoholic, whereas twice as many females as males are depressed. Many of the male alcoholics
appear to have a depression that is masked by the alcohol problem. Because it is hard for many men to admit depression, they may turn to substance abuse or antisocial behavior to escape their psychological pain.

Even though inner conflict and stress can precipitate heavy drinking, we now feel fairly certain that alcoholics fall prey to their illness because they metabolize alcohol differently from nonalcoholics. This is either secondary to a genetic predisposition or to the disruptive biochemical effects of heavy drinking.

**Alcohol and Nutrition**

If we look at the destructive effects of regular drinking from a purely nutritional point of view, we see that, like sugar, alcohol gives you "empty" calories, with no vitamins, minerals or amino acids. It induces malabsorption of many nutrients and creates a greater need for them. Alcoholics have deficiencies of all the B complex vitamins, of amino acids and of some minerals. In fact, even small amounts of alcohol taken regularly will create vitamin B complex problems because alcohol decreases the absorption of vitamins B1, B2, and folic acid. Vitamins B6 and C are destroyed by acetaldehyde, a breakdown product of alcohol produced by the liver. Alcohol also increases urinary excretion of zinc, magnesium, calcium, and vitamin B12, and thus leads to depletion of those substances as well.

As we have seen, almost all these substances can be related to mood, and many of them help form the brain amines. Recent studies of brain amine metabolism have shown alcohol reduces the synthesis of neurotransmitters from tyrosine. And, it should be noted, a significant number of alcoholics have an associated depression.

If you are not alcoholic but do have daily drinks, you need supplementation to offset the drain on your body’s nutritional status. Occasional social drinking should not pose this kind of nutritional threat and does not require the same replacement efforts.

The nutritional approach to treating depression works well in drinkers because it is totally safe to mix nutrients with alcohol and because the alcoholic needs the nutrients anyway. On the other hand, the mixture of traditional antidepressant drugs with alcohol can be very dangerous, making orthodox treatment risky. Even when counseled to avoid alcohol, there is no guarantee a person will do so, and a number of suicides have eventuated from the combination of alcohol with antidepressant medication or tranquillizers.

Many drinkers, especially those involved in AA (Alcoholics Anonymous) programs, are advised by their support groups to avoid psychiatric medication of any kind. This can create problems for those who need biochemical help to eliminate depression. The nutrient program poses no such dilemma.

After treatment with specific diets and nutrients, many alcoholics naturally lose the craving and compulsion to drink. Therefore, the self-discipline required is in taking the supplements, more than in avoiding the alcohol.

**Cocaine**

We’ve all heard about the widespread use of cocaine among professionals and athletes, and in the white collar sector.

We also know that a new cocaine trend is cause for
appear to have a depression that is masked by the alcohol problem. Because it is hard for many men to admit depression, they may turn to substance abuse or antisocial behavior to escape their psychological pain.

Even though inner conflict and stress can precipitate heavy drinking, we now feel fairly certain that alcoholics fall prey to their illness because they metabolize alcohol differently from nonalcoholics. This is either secondary to a genetic predisposition or to the disruptive biochemical effects of heavy drinking.

**Alcohol and Nutrition**

If we look at the destructive effects of regular drinking from a purely nutritional point of view, we see that, like sugar, alcohol gives you “empty” calories, with no vitamins, minerals or amino acids. It induces malabsorption of many nutrients and creates a greater need for them. Alcoholics have deficiencies of all the B complex vitamins, of amino acids and of some minerals. In fact, even small amounts of alcohol taken regularly will create vitamin B complex problems because alcohol decreases the absorption of vitamins B₁, B₂ and folic acid. Vitamins B₆ and C are destroyed by acetaldehyde, a breakdown product of alcohol produced by the liver. Alcohol also increases urinary excretion of zinc, magnesium, calcium, and vitamin B₁₂, and thus leads to depletion of those substances as well.

As we have seen, almost all these substances can be related to mood, and many of them help form the brain amines. Recent studies of brain amine metabolism have shown alcohol reduces the synthesis of neurotransmitters from tyrosine. And, it should be noted, a significant number of alcoholics have an associated depression.

If you are not alcoholic but do have daily drinks, you need supplementation to offset the drain on your body’s nutritional status. Occasional social drinking should not pose this kind of nutritional threat and does not require the same replacement efforts.

The nutritional approach to treating depression works well in drinkers because it is totally safe to mix nutrients with alcohol and because the alcoholic needs the nutrients anyway. On the other hand, the mixture of traditional antidepressant drugs with alcohol can be very dangerous, making orthodox treatment risky. Even when counseled to avoid alcohol, there is no guarantee a person will do so, and a number of suicides have eventuated from the combination of alcohol with antidepressant medication or tranquilizers.

Many drinkers, especially those involved in AA (Alcoholics Anonymous) programs, are advised by their support groups to avoid psychiatric medication of any kind. This can create problems for those who need biochemical help to eliminate depression. The nutrient program poses no such dilemma.

After treatment with specific diets and nutrients, many alcoholics naturally lose the craving and compulsion to drink. Therefore, the self-discipline required is in taking the supplements, more than in avoiding the alcohol.

**Cocaine**

We’ve all heard about the widespread use of cocaine among professionals and athletes, and in the white collar sector.

We also know that a new cocaine trend is cause for
much greater alarm. The villain is "crack," a cheap, smokable, readily available form of cocaine that is highly addictive and is considered to be far more dangerous than the usual powdered, snorted variety used by the older crowd.

A 1985 University of Michigan survey indicated that 17 percent of high school students had used cocaine. What will happen to this number now, when cheaper, more addictive forms of cocaine spread across our land? And what will happen to the moods and psychology of our teenagers, who are already on biochemically induced emotional rollercoasters from sugar, alcohol, tobacco, caffeine and other drugs?

The following set of symptoms is common among cocaine users: blurred vision, panic attacks, hyperactivity, severe headaches, weight loss, nasal problems, paranoia, convulsions, depression and precipitation of manic states.

Because of its high or euphoric effect, many people use the drug to counteract drops in mood and energy or, ironically, to treat their own depression. In fact chronic cocaine usage creates depression. Cocaine causes our brain cells to release the stored neurotransmitters norepinephrine and dopamine into the space between nerve cells (synapse) where they chemically interact with the next cell to produce stimulatory effects. Cocaine not only causes increased release of these neurotransmitters but also decreases the reuptake of norepinephrine, dopamine and serotonin back into their storage cells. Cocaine also temporarily inhibits the enzyme that breaks down the neurotransmitters. The net effect is to keep this system of nervous pathways excited and "on" in an unnatural way. But when the neurotransmitters are finally metabolized, not only is there an end to the high, there is also a deficiency until the body produces more, or until another cocaine dose stimulates release of the gradually depleting "stores" of neurotransmitters. When cocaine use is repeated a sufficient number of times without adequate nutrient replacement of the neurotransmitter precursors, a final depressed, depleted, exhausted state can occur.

Several studies have reported successful treatment of cocaine addiction using the amino acids L-tyrosine, L-tryptophan, L-glutamine, and L-phenylalanine, plus vitamins and minerals. These nutrients replace the depleted neurotransmitters and relieve the underlying mood disorder that may often lead to the addiction in the first place.

TOBACCO

Smoking depletes your body of vitamins A, B₁, B₉, C and E, and of the amino acid cysteine. Smokers tend to have vitamin C levels about half that of nonsmokers; they also have lower vitamin B₉ levels. These deficiencies are importantly connected with depression. Tobacco may contribute to mood fluctuations from an allergic standpoint as well.

For these reasons, among other important medical considerations, it's important to stop smoking. However, those who do smoke particularly need to replace their depleted vitamins and amino acids with a supplemental nutrient program.

DRUGS THAT MAY CAUSE DEPRESSION

The following substances may cause depression. (The generic name is listed first and the trade names are in parentheses.)
much greater alarm. The villain is "crack," a cheap, smokable, readily available form of cocaine that is highly addictive and is considered to be far more dangerous than the usual powdered, snorted variety used by the older crowd.

A 1985 University of Michigan survey indicated that 17 percent of high school students had used cocaine. What will happen to this number now, when cheaper, more addictive forms of cocaine spread across our land? And what will happen to the moods and psychology of our teenagers, who are already on biochemically induced emotional rollercoasters from sugar, alcohol, tobacco, caffeine and other drugs?

The following set of symptoms is common among cocaine users: blurred vision, panic attacks, hyperactivity, severe headaches, weight loss, nasal problems, paranoia, convulsions, depression and precipitation of manic states.

Because of its high or euphoric effect, many people use the drug to counteract drops in mood and energy or, ironically, to treat their own depression. In fact chronic cocaine usage creates depression. Cocaine causes our brain cells to release the stored neurotransmitters norepinephrine and dopamine into the space between nerve cells (synapse) where they chemically interact with the next cell to produce stimulatory effects. Cocaine not only causes increased release of these neurotransmitters but also decreases the reuptake of norepinephrine, dopamine and serotonin back into their storage cells. Cocaine also temporarily inhibits the enzyme that breaks down the neurotransmitters. The net effect is to keep this system of nervous pathways excited and "on" in an unnatural way. But when the neurotransmitters are finally metabolized, not only is there an end to the high, there is also a deficiency

until the body produces more, or until another cocaine dose stimulates release of the gradually depleting "stores" of neurotransmitters. When cocaine use is repeated a sufficient number of times without adequate nutrient replacement of the neurotransmitter precursors, a final depressed, depleted, exhausted state can occur.

Several studies have reported successful treatment of cocaine addiction using the amino acids L-tyrosine, L-tryptophan, L-glutamine, and L-phenylalanine, plus vitamins and minerals. These nutrients replace the depleted neurotransmitters and relieve the underlying mood disorder that may often lead to the addiction in the first place.

TOBACCO

Smoking depletes your body of vitamins A, B₁, B₅, B₉, C and E, and of the amino acid cysteine. Smokers tend to have vitamin C levels about half that of nonsmokers; they also have lower vitamin B₉ levels. These deficiencies are importantly connected with depression. Tobacco may contribute to mood fluctuations from an allergic standpoint as well.

For these reasons, among other important medical considerations, it's important to stop smoking. However, those who do smoke particularly need to replace their depleted vitamins and amino acids with a supplemental nutrient program.

DRUGS THAT MAY CAUSE DEPRESSION

The following substances may cause depression. (The generic name is listed first and the trade names are in parentheses.)
Antibiotics
(When you take antibiotics, be sure to take vitamin B complex daily also.)
Cycloserine (Seromycin)
Gram negative antibiotics
Sulfonamides (Bactrim, Azo Gantanol, Cotrim, Septra, Sulfatrim, Sulfamethoxazole)
Neomycin
Tetracyclines
Metronidazole (Flagyl)

Antimalarials
Sulfadoxine
Pyrimethamine (Daraprim, Fansidar)

Arthritis or Pain Medicines
Phenylbutazone (Azolid, Butazolidin)
Indomethacin (Indocin)
Piroxicam (Feldene)
Sulfasalazine (Azulfidine)
Aspirin (including Bufferin, Anacin, Ascriptin)
Phenacetin (A.P.C. with Codeine, Propoxyphene Compound, Soma Compound)

Birth Control Pills and Other Hormones
Estrogens
Progestosterone
Steroids (may also cause euphoria or even mania)

Chemotherapy
Vinblastine sulfate (Velban)
Methotrexate
Procarbazine hydrochloride (Matulane)

Diet Pills
Amphetamines (Obetrol, Dextrrine, Desoxyn)
Benzphetamine (Didrex)

The Way Up From Down
Diethylpropion hydrochloride (Tenuate, Tepanil)
Phenmetrazine hydrochloride (Preludin)
Mazindol (Sanorex, Mazanor)
Fenfluramine hydrochloride (Pondimin)
Phendimetrazine tartrate (Plegine, Melfiat, Bontril)
Phentermine (Ionamin, Fastin, Adipex-P)

Diuretics
Furosemide
Triamterene (Dyazide, Dyrenium)

Heart Medicines
Digitalis (Digoxin, Lanoxin, Cedilanid, Crystodigin)
Procaïnamide (Pronestyl, Procan SR)

High Blood Pressure Medicines
Hydralazine (Apresazide Apresoline)
Methyldopa (Aldomet, Aldoclor, Aldoril)
Clonidine hydrochloride (Catapres, Combipres)
Guanethidine (Ismelin, Esimil)
Propanolol hydrochloride (Inderal, Inderide)
Bethanidine
Reserpine (Chloroperine, Regroton, Diupres, Duiitensn-R, H-H-R Tabs, Hydropries, Serpasil, Unipres, Ser-Ap-Es, Naquival, Metatensin, Hydromox, Hydro-Fluserpine)

Medication for Parkinson’s Disease
Amantadine hydrochloride (Symmetrel)
Levodopa (Larodopa, Sinemet) (may also cause mania)

Drugs for Psychosis
Phenothiazines, (Compazine, Phenergan, Sparine, Stelazine, Temaril, Thorazine)
Haloperidol (Haldol)
Thioxyzathene (Navane)
Antibiotics
(When you take antibiotics, be sure to take vitamin B complex daily also.)
Cycloserine (Seromycin)
Gram negative antibiotics
Sulfonamides (Bactrim, Azo Gantanol, Cotrim, Septra, Sulfatrim, Sulfia Methoxazole)
Neomycin
Tetracyclines
Metronidazole (Flagyl)

Antimalarials
Sulfadoxine
Pyrimethamine (Daraprim, Fansidar)

Arthritis or Pain Medicines
Phenylbutazone (Azolid, Butazolidin)
Indomethacin (Indocin)
Piroxicam (Feldene)
Sulfasalazine (Azulfidine)
Aspirin (including Bufferin, Anacin, Ascriptin)
Phenacetin (A.P.C. with Codeine, Propoxyphene Compound, Soma Compound)

Birth Control Pills and Other Hormones
Estrogens
Progesterone
Steroids (may also cause euphoria or even mania)

Chemotherapy
Vinblastine sulfate (Velban)
Methotrexate
Procarbazine hydrochloride (Matulane)

Diet Pills
Amphetamines (Obetrol, Dextedrine, Desoxyn)
Benzphetamine (Didrex)

The Way Up From Down
Diethylpropion hydrochloride (Tenuate, Tepanal)
Phenmetrazine hydrochloride (Preludin)
Mazindol (Sanorex, Mazanor)
Fenfluramine hydrochloride (Pondimin)
Phendimetrazine tartrate (Pleine, Melfiat, Bontril)
Phentermine (Ionamin, Fastin, Adipex-P)

Diuretics
Furosemide
Triamterene (Dyazide, Dyrenium)

Heart Medicines
Digitalis (Digoxin, Lanoxin, Cedilanid, Crystodigin)
Procanamide (Pronestyl, Procan SR)

High Blood Pressure Medicines
Hydralazine (Apresazide, Apresoline)
 Methyldopa (Aldomet, Aldoclor, Aldoril)
Clonidine hydrochloride (Catapres, Combipres)
Guanethidine (Ismelin, Esimil)
Propanolol hydrochloride (Inderal, Inderide)
Bethanidn 
Reserpine (Chlorserpine, Regroton, Diupres, Diutensen-R, H-H-R Tabs, Hydropries, Serpasil, Unipres, Ser-Ap-Es, Naquival, Metatsensin, Hydromox, Hydro-Fluserpine)

Medication for Parkinson's Disease
Amantadine hydrochloride (Symmetrel)
Levodopa (Larodopa, Sinemet) (may also cause mania)

Drugs for Psychoisis
Phenothiazines, (Compazine, Phenergan, Sparine, Stelazine, Temaril, Thorazine)
Haloperidol (Haldol)
Thioxanthene (Navane)
Seizure Medicines
   Succinimide derivatives (Celontin, Zarontin, Milontin)
   Carbamazepine (Tegretol)
   Mephenytoin (Mesantoin)

Tranquilizers and Sleeping Medicines
   Librium, Valium, barbiturates, other sleeping pills

Miscellaneous
   Disulfiram (Antabuse)
   Physostigmine (Antilirium)
   Tagamet (ulcer treatment; creates various nutritional deficiencies if taken for a long time)
   Choline (a nutrient supplement good for memory, but large doses can cause or exaggerate low moods.
   Consequently, it is helpful to give this to a manic person to help lower the mood to normal)
   Lecithin (this is a nutrient combination of choline and inositol)
   Penicillamine
   Cholestyramine

   Do not stop any of these medications without consulting your doctor.