

by Ray Peat

**A**round 1976, there were some warnings about the occurrence of kidney and breast cancers from prolonged use of reserpine, which had been very popular for controlling blood pressure. It was thought that the elevation of prolactin by reserpine accounted for the production of tumors. Since tryptophan stimulates prolactin secretions, I thought it might turn out to be just as carcinogenic as reserpine. The people who sell tryptophan don't want to hear this.

Olney's work in the 1970's with aspartic and glutamic acid should have aroused the public to be cautious about the use of isolated amino acids. Even after these amino acids were shown to cause seizures, many companies continued to sell them without warnings.

Orotic acid was known to alter pyrimidine and ammonia metabolism, so I thought it wasn't wise to use supplements that contained large amounts of it. A couple of years ago orotic acid was described as "an excellent liver carcinogen," based on experiments with rats. I have known people who used it regularly in quantities similar to those which are carcinogenic for rats. But it continues to be sold, without warnings.

In 1953, a few small tablets of ascorbic acid completely cured my poison oak and I never got it again though I worked in the woods every summer for several years. But in the late 1950s, I had cold-like symptoms for a few days after I took a 500 mg. tablet, and the same thing happened when I took another tablet a few months later. In the late 1960s, I began taking ascorbic acid regularly and I had a chronic cough; about a year later, I developed bleeding colitis. These symptoms stopped when I stopped taking ascorbic acid. I found that I could detect a very small amount of synthetic ascorbic acid in processed foods, by the recurrence of those symptoms. Over the years, seeing other people with similar symptoms, I would tell them about the allergenicity of vitamin tablets or powders, and their symptoms would go away. In this way I saw that the most frequent sensitivity was to ascorbic acid, riboflavin, and rutin. Later, I learned that these are synthesized from cornstarch. Synthetic ascorbic acid contains significant amounts of heavy metals, apparently introduced by the use of sulphuric acid as an oxidant. (The manufacture of sulphuric acid has customarily involved the use of a "lead room." I don't know whether this technology is still in use.) I experimented

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with large daily intakes of vitamin C, for example 4000 mg. per day in the form of fresh grapefruit juice, and didn't experience any unpleasant reaction, but 1 or 2 mg. of the synthetic form - taken by accident in foods such as all-bran breakfast cereal, bread, or sausage, which I didn't suspect would contain added ascorbic acid - would cause days of sickness with intestinal bleeding. Since my reactions to metabisulfite and to synthetic ascorbic acid are similar, though not identical, I suspect that sulfur compounds produced in manufacturing ascorbic acid are partly responsible for its allergenicity. Interestingly, I have had strong allergic reactions to several kinds of single amino acids; I suspect that these, and many other foods and supplements, are exposed to sulfites or ascorbic acid that have been used as preservatives at some stage of manufacture.

Although more people are writing about the dangers of iron supplementation now than when I wrote about it in *Nutrition for Women* in 1975, it seems that people are using just as much as ever. A hundred

years ago, arsenic was the common treatment for "anemia," and it "worked," just as iron works to raise the production of red blood cells. This "anti-anemia" effect is a reaction to injury, and has nothing to do with a nutritional iron deficiency. Even heavy menstruation involves the loss of only 30 or 40 mg. of iron per month, or about 1 mg. per day, and it is practically impossible to get such a small amount in the diet. Immunosuppression and carcinogenesis by iron have been well established for about 20 years.

### Substance Abuse

The Center for Science in the Public Interest got a lot of publicity a few years ago when it petitioned the FDA to require warning labels on products that contain caffeine. Many other groups circulate warnings about the "dangers" of coffee. When coffee was introduced into Europe, some people seemed to think it was an evil witch's brew; Bach's *Coffee Cantata* ridiculed the great fear of coffee.

To make false claims about anything abuses the truth. A network of mistaken beliefs can lead to a perverted culture, which ignores important issues because of

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> an obsession with false issues. I think it is useful now and then to outline the kinds of mistakes that are being made regarding the abused substances, coffee and caffeine.

Dr. Minton at Ohio State, and the mass media which mindlessly echoed his beliefs, started a cultish idea that caffeine caused cystic breast disease. His publications are marvels of ignorance and irrationality, which probably someday will be used in college classes to illustrate America's blind faith in the cult of medicine. Other studies found an entire lack of association between caffeine and breast disease, but I will not be surprised if caffeine is ultimately found to be therapeutic for some types of cystic breast disease, because of its effects on hormones and cell-regulation.

Decaffeinated coffee was found to be associated with cancer of the pancreas. A residue of solvent in the coffee is a likely candidate for explaining the association, since the other groups found by epidemiologists to have a high rate of pancreatic cancer were people who work in

gasoline stations and in dry-cleaning businesses. Several studies have found caffeine to have a protective effect against cancer. For example, Würzner, *et al.* found that tumor incidence in rats fed coffee went down as the caffeine content went up ("A two-year feeding study of instant coffees in rats. II. Incidence and types of neoplasms," *Food Cosmet. Toxicol.* 15:289-296, 1977).

Caffeine has several effects which protect against cancer. It strongly protects against the cancers caused by chemical carcinogens (including those in smoke), and even against those caused by ultraviolet radiation. It stimulates the repair process which corrects mutations (in mammals, but not in bacteria), and it stimulates the immune system.

I think some of the beneficial effects of caffeine result from its stimulation of the thyroid gland, and of normal respiration. While it stimulates normal respiration it has an anti-inflammatory action, which probably involves both prostaglandin regulation and an antioxidant action. It is chemically very similar to our natural antioxidant, uric acid, and it raises the level of uric acid in both the blood and the

urine.

Giving rats the human equivalent dose of 3500 mg/day has no harmful effects, even when continued for several generations. One study found no harmful effects when rats were fed large amounts of caffeine for up to three and a half years. Since lab rats rarely live that long, I think caffeine's effects on longevity should be investigated.

Theophylline, found in tea, is very similar to caffeine. It has been shown experimentally to retard the growth of cancer cells, and even to promote their recovery of normal function. It is widely used to treat asthma. Theophylline and caffeine have been used to treat apnea in infants, since they stimulate the nerves that regulate breathing. Many people who use theophylline for their asthma don't realize that a few cups of tea would provide the same drug, more pleasantly and less expensively.

Dietitians and their textbooks generally suffer from a cultish belief that coffee and tea "have absolutely no nutritional value." The British found that tea and coffee provide about 20% of their national dietary intake of several essential nutrients. When the complete absence of certain essential nutrients in white bread was discussed, dietitians defended the use of white bread as an appropriate part of a balanced diet. I mention this simply to establish the cultish nature of their professional behavior, not to advocate the use of whole grains or a larger consumption of tea.

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