

SCIENTIFIC BASIS FOR THE CONCEPT OF TOXEMIA

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Toxemia has long been thought to be the cause of many diseases. Scientific scrutiny reveals much support for this concept when one considers certain exogenous chemicals and excess amounts of normal metabolites to be toxins. A holistic program aimed at mental, biochemical and structural balance may prevent and overcome toxemia.

For many years a school of thought has existed which has regarded toxemia to be the basic cause of many diseases. The concept of toxemia was popularized by John Tilden, MD, in the first half of the 20th century. This doctor wrote a book entitled *Toxemia—The Basic Cause of Disease*¹ in which he presented his ideas. Tilden stated that accumulation of toxins causes most diseases, from diabetes and atherosclerosis to cancer. Such accumulation of toxins, he said, is the result of overeating; eating the wrong foods; deficiencies of vitamins or minerals; ingestion of coffee, tea, and alcohol; use of tobacco or drugs; bacterial activity; general fatigue (called enervation); uncongenial environment; negative emotions (worry, jealousy, rage, fear); physical excesses; postural tension; physical defects; injuries; and the "unpoised" state. Details of the concept of toxemia, however, have never been defined in scientific terms. Many questions have been left unanswered, foremost of which is: What are the toxins?

It is the purpose of this article to examine the

concept of toxemia and see if there is a scientific basis. What chemicals are supposedly responsible for causing disease?

For the purposes of this article, toxemia will be defined as the accumulation of either a substance which is toxic in any amount, or a substance which is non-toxic in "normal" amounts but toxic when in excess.

The presence of chemicals in the body which are clearly toxic in any amount is universally recognized as a cause of disease. An example would be botulism poison, a toxin produced by certain bacteria. Another example would be phenol, indole, and skatole produced by intestinal bacteria. If one eats too much protein the bacteria in the intestine will become the protein-consuming (proteolytic) type. These bacteria will metabolize the products of protein breakdown into toxins such as those mentioned above. These toxins may be absorbed into the bloodstream and contribute to disease formation.² Other examples of exogenous toxins are some food preservatives, flavorings, and colorings; pesticide residues; lead; etc.

What about substances which are non-toxic in "normal" amounts but toxic when in excess? Consideration of these provides much scientific basis for the concept of toxemia. A list of such chemicals includes cholesterol, triglycerides, glucose, uric acid, and other metabolites.

Cholesterol may come from the diet or from production by the liver. It is needed to form bile salts which aid in digestion and absorption of fats, to form certain hormones, to make up part of all cell membranes, plus other minor roles. An increased intake of cholesterol or saturated fat is considered by many authorities to cause an increase in the amount of cholesterol in the bloodstream.^{3,4} An increased concentration of cholesterol in the blood stream, apart from consideration of the lipoprotein hypothesis, will cause cardiovascular disease.^{4,5,6} The average American has 150-280 mg cholesterol per 100 ml serum.⁷ The ideal level is lower than 160 mg per 100 ml serum.⁸

Triglycerides are an important form of energy for the body, plus a storage form of energy. Generally speaking, most of the fats in our diet and bloodstream are triglycerides. These chemicals are derived from unsaturated fats like oils, saturated fats as found in animal foods, and carbohydrates (via conversion in the liver). It is normal to have about 40-150 mg triglycerides per 100 ml serum.⁷ When the level rises too high, the physical consistency of the blood is altered making the blood more resistant to passage through the narrowest blood vessels. Also, as the triglyceride level increases, the blood cells and platelets become sticky and clump together, further blocking blood flow.⁹ The ideal triglyceride level is under 100 mg per 100 ml serum.⁸

Classically, a decrease in blood flow is most clearly associated with heart disease. If the blood flow is too low, the heart muscle will be deprived of oxygen and angina pectoris will result. If the deprivation of oxygen is too great, myocardial infarction results. It is essential to understand that many other diseases may result from oxygen starvation. The function of any cell in the body is compromised when blood flow is reduced. Not only is oxygen delivery reduced, but the supply of every nutrient is decreased. Also less opportunity exists for waste products to be cleared from the tissue. This situation can contribute to disease in any tissue: if it occurs in the joints, arthritis or degenerative joint disease may result; if it occurs in the brain, senility may result; if it occurs in the legs, leg pain may result. This condition of oxygen

deprivation has even been associated with cancer causation. A fundamental characteristic of cancer cells is that they thrive in an oxygen-free environment, called the "Warburg" effect.¹⁰ Otto Warburg, a Nobel prize winner, claimed that cells would become cancerous if deprived of oxygen for too long a time, more-or-less as a survival mechanism.¹¹ Experiments have shown that oxygen deprivation may cause normal cells to become cancerous.¹² Though this theory is not 100% accepted by the orthodoxy today, much can be said for it.

Uric acid is another chemical which is normally present in the bloodstream. It is from dietary consumption of meats and alcohol, breakdown of tissue within the body, and endogenous synthesis.¹³ But when it occurs in excess amounts, it may cause gout, a serious disease.

Glucose is blood sugar. It is the primary source of fuel for the body, and may come from the breakdown of carbohydrate, or conversion from fat or protein. It is normally found in the following amounts: 70-100 mg per 100 ml blood.⁷ When fasting blood sugar is consistently in excess of 130 mg per 100 ml, an accurate diagnosis of diabetes mellitus can usually be made.⁷

This condition is characterized by widespread pathology such as increased incidence and severity of cardiovascular disease, nerve pathology, muscle weakness, impotence, cataracts and later blindness. Glucose can also be a toxin if present in excess amounts.

Metabolites of protein can also be toxic. If excess protein is consumed, excess homocysteine will accumulate as a result of protein breakdown. This chemical is thought to irritate the walls of arteries and promote deposition of fats. The result is cardiovascular disease.¹⁴

Generally speaking, many intermediary metabolites, if allowed to accumulate in excessive amounts, may be harmful. The chemical nature of these substances has been considered elsewhere.¹⁵

A common effect of many toxins is provocation of inflammation. As the level of toxins increases, the body will initiate a self-protective inflammatory response. "Inflammation serves to destroy, dilute, or wall-off the injurious agent and the tissue cells that it may have destroyed. In turn, the inflammatory response sets into motion a complex series of events which, as far as possible, heal and reconstitute the damaged tissue."²¹ All disease names ending with 'itis' are inflammations (eg, tonsillitis, arthritis, colitis, etc.) Proponents of the toxemia concept hold that the body, if given the chance, will successfully

neutralize the injurious agent and cure itself of the disease. Unfortunately, however, treatment for such diseases is usually directed at suppression of the self-curing inflammatory process, not removal of the cause.

What are some practical measures by which the chance of developing toxemia may be reduced? One of the most important would be to never overeat. As Bjorksten says, with a low calorie diet foodstuffs are totally oxidized to the end products of energy, carbon dioxide, and water. If, however, we overeat, metabolic "bottlenecks" will result and many intermediary metabolites will accumulate. Some of these chemicals promote aging and other pathological changes.¹⁵

Another valuable anti-toxemia measure is periodic fasting. This gives the body a chance to dispose of the toxic buildup which results from the common practice of overeating and eating the wrong foods.⁹

A third valuable method would be to greatly reduce the consumption of fatty foods such as: oils, lard, hydrogenated shortening, butter, margarine, bacon, salad dressings, meat, poultry, fish, dairy products, and eggs.¹⁶ This would help in decreasing serum triglyceride and cholesterol to more healthful levels. In America, the average person consumes about 40% of his calories in the form of fats. The McGovern Senate Subcommittee on Nutrition recommended that this figure be reduced to 30%.¹⁷ It would be more beneficial if this amount were reduced even further, to no more than about 10% of the total calories. To do this, the fatty foods listed above should be avoided. If fruits, vegetables, legumes and grains are the main foods eaten, the level of 5-10% fat will be achieved.

To avoid excess uric acid levels, the amount of animal foods and alcohol in the diet should be minimal, and ideal weight should be achieved.¹⁸ Though it is recognized that gout is not exclusively from a poor diet and overweight, correction of these often will provide a satisfactory solution to the problem.

To avoid excess glucose levels, the consumption of refined carbohydrates, especially sugar and sugar-containing foods, but also honey and other very sweet "natural" foods, should be drastically cut down.¹⁸ Also, body weight should be maintained within normal limits as overweight reduces the ability to maintain normal glucose levels.¹⁹

Protein intake should be restricted to no more than about 30 grams per day.²⁰ This will prohibit buildup of homocysteine, and the bacteria which produce phenol, indole, and skatole.

If the diet is primarily composed of whole unrefined foods, largely uncooked, an abundance of vitamins and minerals will be supplied. This will forestall possible deficiencies.

Coffee, tea, alcohol, tobacco and drugs should be avoided. These substances are notoriously unhealthy.

Negative emotions can often be effectively curbed with stress management classes. Postural tension can be corrected by use of chiropractic manipulation, regular exercise, and proper diet.

In conclusion, it is clear that a scientific basis for the concept of toxemia exists. Exogenous chemicals can be toxic, as can normal metabolites if present in excessive amounts. A holistic program of proper diet, stress management, regular exercise, and chiropractic manipulation, where indicated, may prevent toxemia. □

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