

A Comparative Investigation of Herbal and Nutritional Supplement-Induced Liver Damage Across the Country

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DESCRIPTION

A dietary supplement is a manufactured product intended to supplement one's diet by taking a pill, capsule, tablet, powder, or liquid. A supplement can provide nutrients either extracted from food sources or that are synthetic in order to increase the quantity of their consumption. The class of nutrient compounds includes vitamins, minerals, fiber, fatty acids, and amino acids. Dietary supplements can also contain substances that have not been confirmed as being essential to life, but are marketed as having a beneficial biological effect, such as plant pigments or polyphenols. Animals can also be a source of supplement ingredients, such as collagen from chickens or fish for example. These are also sold individually and in combination, and may be combined with nutrient ingredients. The European Commission has also established harmonized rules to help insure that food supplements are safe and appropriately labeled. Multivitamins are the most commonly used product among types of dietary supplements. The United States National Institutes of Health states that supplements "may be of value" for those who are nutrient deficient from their diet and receive approval from their medical provider. In the United States, it is against federal regulations for supplement manufacturers to claim that these products prevent or treat any disease. Companies are allowed to use what is referred to as "Structure/Function" wording if there is substantiation of scientific evidence for a supplement providing a potential health effect. An example would be helps maintain healthy joints", but the label must bear a disclaimer that the Food and Drug Administration (FDA) "has not evaluated the claim" and that the dietary supplement product is not intended to "diagnose, treat, cure or prevent any disease", because only a drug can legally make such a claim. The FDA enforces these regulations and also prohibits the sale of supplements and supplement ingredients that are dangerous, or supplements not made according to standardized Good Manufacturing Practices (GMPs).

Types of dietary supplement

Vitamins: A vitamin is an organic compound required by an organism

as a vital nutrient in limited amounts. An organic chemical compound (or related set of compounds) is called a vitamin when it cannot be synthesized in sufficient quantities by an organism and must be obtained from the diet. The term is conditional both on the circumstances and on the particular organism. For example, ascorbic acid (vitamin C) is a vitamin for anthropoid primates, humans, guinea pigs and bats, but not for other mammals. Vitamin D is not an essential nutrient for people who get sufficient exposure to ultraviolet light, either from the sun or an artificial source, as they synthesize vitamin D in skin. Humans require thirteen vitamins in their diet, most of which are actually groups of related molecules, "vitamers", (e.g. vitamin E includes tocopherols and tocotrienols, vitamin K includes vitamin K1 and K2). The list: vitamins A, C, D, E, K, Thiamine (B1), Riboflavin (B2), Niacin (B3), Pantothenic Acid (B5), Vitamin B6, Biotin (B7), Folate (B9) and Vitamin B12. Vitamin intake below recommended amounts can result in signs and symptoms associated with vitamin deficiency. There is little evidence of benefit when vitamins are consumed as a dietary supplement by those who are healthy and have a nutritionally adequate diet.

Minerals: Minerals are the exogenous chemical elements indispensable for life. Four minerals—carbon, hydrogen, oxygen, and nitrogen—are essential for life but are so ubiquitous in food and drink that these are not considered nutrients and there are no recommended intakes for these as minerals. The need for nitrogen is addressed by requirements set for protein, which is composed of nitrogen-containing amino acids. Sulfur is essential, but for humans, not identified as having a recommended intake per se. Instead, recommended intakes are identified for the sulfur-containing amino acids methionine and cysteine. There are dietary supplements that provide sulfur, such as taurine and methylsulfonylmethane.

The essential nutrient minerals for humans, listed in order by weight needed to be at the Recommended Dietary Allowance or Adequate Intake are potassium, chlorine, sodium, calcium, phosphorus, magnesium, iron, zinc, manganese, copper, iodine, chromium, molybdenum, selenium and cobalt (the last as a

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component of vitamin B12). There are other minerals which are essential for some plants and animals, but may or may not be essential for humans, such as boron and silicon. Essential and

purportedly essential minerals are marketed as dietary supplements, individually and in combination with vitamins and other minerals.