

Vitamin supplement little more than 'snake oil'

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A popular vitamin supplement is being advertised with claims that are demonstrably untrue, as revealed by research published in the open access journal *BMC Pharmacology*.

Benfotiamine is a synthetic derivative of thiamine (vitamin B1). It is marketed heavily as a dietary supplement using a selection of unsubstantiated, 'not-quite-medical' claims that tend to characterize this field. A large part of this campaign has been built around the belief that benfotiamine is lipid-soluble and, therefore, more physiologically active. Scientific research led by Dr Lucien Bettendorff of the Center for Cellular and Molecular Neurobiology at the University of Liège, Belgium, has entirely disproved these claims.

A severe deficiency of thiamine is known to cause weight loss, emotional disturbances, impaired sensory perception, weakness and pain in the limbs, and periods of irregular heart rate. Deficiencies can occur as a result of alcoholism or malnutrition. As thiamine itself is very poorly absorbed by the body, it must be taken in as various precursor forms. This research shows that benfotiamine may not be as effective in this regard as has been claimed, in particular concerning its ability to raise effective thiamine levels in the central nervous system.

According to Bettendorff, "We suspect that those companies selling benfotiamine have poisoned much of the recent literature in an attempt to bestow it with properties that it does not have". Benfotiamine has been previously shown to prevent several diabetic complications in

experimental animal models. The researchers carried out experiments in mice in which benfotiamine was administered using several different techniques and the resulting levels of thiamine were measured in various parts of the body. Contrary to other claims about its solubility, the results show that benfotiamine is only sparingly soluble in water under physiological conditions and cannot be dissolved in octanol or oils.

As Bettendorff explains, "Benfotiamine is very often considered a 'lipid-soluble' thiamine precursor from the disulfide derivative family though it is neither lipid-soluble, nor a disulfide. Sometimes, it is considered to have more biological activity than thiamine disulfides, but our study shows that it does not even penetrate cell membranes, except in those cells containing an ecto-alkaline phosphatase. There is no evidence that benfotiamine would be more effective than other precursors as a therapeutic agent for complications of diabetes."

Due to the wide-reaching nature of the false claims about this supplement, it was important to the authors that their work be published in *BMC Pharmacology* as it is an open access journal that makes research freely available.

Source: BioMed Central

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