Risk assessment for the amino acids taurine, L-glutamine and L-arginine.

Shao A, Hathcock JN.

Source

Council for Responsible Nutrition, 1828 L Street, NW, Suite 900, Washington, DC 20036-5114, USA. ashao@crnusa.org

Abstract

Taurine, glutamine and arginine are examples of amino acids which have become increasingly popular as ingredients in dietary supplements and functional foods and beverages. Animal and human clinical research suggests that oral supplementation of these amino acids provides additional health and/or performance benefits beyond those observed from normal intake of dietary protein. The increased consumer awareness and use of these amino acids as ingredients in dietary supplements and functional foods warrant a comprehensive review of their safety through quantitative risk assessment, and identification of a potential safe upper level of intake. The absence of a systematic pattern of adverse effects in humans in response to orally administered taurine (Tau), l-glutamine (Gln) and l-arginine (Arg) precluded the selection of a no observed adverse effect level (NOAEL) or lowest observed adverse effect level (LOAEL). Therefore, by definition, the usual approach to risk assessment for identification of a tolerable upper level of intake (UL) could not be used. Instead, the newer method described as the Observed Safe Level (OSL) or Highest Observed Intake (HOI) was utilized. The OSL risk assessments indicate that based on the available published human clinical trial data, the evidence for the absence of adverse effects is strong for Tau at supplemental intakes up to 3 g/d, Gln at intakes up to 14 g/d and Arg at intakes up to 20 g/d, and these levels are identified as the respective OSLs for normal healthy adults. Although much higher levels of each of these amino acids have been tested without adverse effects and may be safe, the data for intakes above these levels are not sufficient for a confident conclusion of long-term safety, and therefore these values are not selected as the OSLs.