

Ideation

Date	19 September 2022
Team ID	PNT2022TMID24963
Project Name	
Maximum Marks	4 Marks

Research in the United States on synthetic sources of dietary calories was initiated in 1958 to develop high nutrient density food for extended manned space travel. Of many known compounds screened, 1,3-butanediol was the most promising. Small amounts in ester form with fatty acids exist in nature, and tests indicate a low acute oral and chronic toxicity similar to that of propylene glycol or glycerol. Multi-generation reproduction, teratological, and mutagen studies have revealed nothing detrimental. Following an adaptation period, 1,3-butanediol furnishes approximately 6 kcal/g if fed at levels not exceeding 20% in the diet of rats. Higher levels result in an impairment in growth and food utilization. In young animals, body fat stores appear to be lessened, as is resistance to the stress of extreme cold. However, dogs fed 20% 1,3-butanediol can maintain sustained muscular work on treadmills, but larger amounts can result in incoordination due to a narcotic effect common to glycols. Little research has been conducted on the behavioral effects of large doses. At present, 1,3-butanediol is used mainly as a solvent for food flavors. If the unpleasant taste problem can be overcome and if given FDA approval, 1,3-butanediol may have an increased role in our food supply as a functional food additive, preservative, and source of calories for man and animals.



Impact metrics

