

Invited Speaker Plenary 1: Functional Foods

Functional foods-an industry dream?

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Compared with the supplement industry the food industry is very restricted in the vitamins/minerals and bioactives that can be added to food and the claims that can be made about them. Under the new health claims legislation it is very likely the burden of proof will be considerable and very few foods/ingredients will have sufficient supporting data to enable a claim. Even a very well documented safe and effective ingredient such as plant sterols may not be allowed to be extended into a wider range of foods because of concerns by the states over a medicalised food supply, potential side effects of over consumption, cost effectiveness etc. This review will examine the status of plant sterols and blood cholesterol, dairy calcium and weight, dairy peptides and blood pressure, dairy conjugated linoleic acid and cancer.

Plant Sterols

Plant sterols in Australia are available only in margarines but in Europe they are available in milk, yoghurt, dressings, soy drinks and cheese-type products. In Australia applications under the novel food regulations for use in milk, bread and cereals have yet to pass the Ministerial Council. Concerns have been raised about the lowering of beta carotene with plant sterols, given the association with plasma beta carotene levels with protection from cancer, heart disease and diabetes and the fact that the lowering of LDL cholesterol with sterols in bread and cereals is less than the 10% usually seen with margarine.

Calcium and Weight Management

Dairy Australia says: "Exciting new research is emerging showing the benefits of dairy in weight management. A number of scientific trials demonstrate that including three daily serves of low-fat dairy in a reduced-calorie eating plan can accelerate weight and fat loss. Participants in the research also lost more centimetres from around their waists. So whether you want to lose weight, burn fat or simply stay lean and trim, make sure you consume three serves of dairy, every day".

These conclusions were based on data from Zemel in the USA (Zemel 2004) and have not been confirmed by other researchers in either humans or animals. The US Dairy council is being sued over their weight loss claim. A lot more data is required from many different researchers.

Dairy Peptides and Blood pressure

Milk fermented by *Lactobacillus Helveticus* contained tripeptides isoleucine-proline-proline (IPP) and valine-proline-proline (VPP), which have been shown to possess angiotensin converting enzyme (ACE) inhibitory activity in vitro and this is marketed in Japan by Calpis and in a different formulation by Valio in Europe. Two papers have been published from these groups both showing dramatic blood pressure lowering in humans which was not statistically different from the placebo when all data was used. Two independent studies showed a modest effect of fermented milk of about 2 mm systolic which was not significantly different from placebo.

Conjugated Linoleic acid

Conjugated linoleic acid (mostly cis 9, trans 11 form) is produced by ruminants and humans eat about 50-150mg/day. Animal studies show that at a human equivalent of about 3g/day it reduces mammary and prostate cancers. The only downside is that at this dose level in humans it produces insulin resistance. More work is required before this can be marketed as a safe and effective functional ingredient.

Conclusions

Although diet is related to disease incidence, the data in relation to functional foods, with one notable exception, is at present not very compelling.

References

Zemel MB. Role of calcium and dairy products in energy partitioning and weight management. *Am J Clin Nutr.* 2004; 79: 907S-912S.