

Can Agave fructans promote or improve health?

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Fructans are non-digestible carbohydrates, they have been considered as good functional components due to their positive effects on a few health related issues, such obesity, diabetes, osteoporosis, and colon cancer to mention some. However, all these data have been generated by research performed exclusively with linear fructans, so one of our questions is: Do branched and highly branched fructans (Agave fructans) present the same health benefits? To establish the relevance of Agave fructans on health different *in vitro* and *in vivo* studies have been conducted.

Diets supplemented with 10% with short- and long-branched fructans have been fed to mice (C57BL/6J). Food intake, weight gain, and blood were documented weekly. Mice were sacrificed after 5 weeks, the stomachs, small and large intestine, as well as femurs and backbones were collected. Glucose, cholesterol, and tryglicerides were determined in blood. Hormones such GLP-1, ghrelin, and osteocalcin were measured. Mineral such calcium and magnesium were analyzed.

The intake and weight of most mice fed with diets supplemented with fructans were lower than the control. Glucose and cholesterol levels were lowered in all mice that consumed diets with fructans. The two hormones (GLP-1 and ghrelin) related with appetite were positively regulated by fructans. Osteocalcin levels increased in all fructans groups (>50%). Calcium in plasma and bone increased in both Agave fructans groups (53.1 to 56-85 mg/mL and 0.402 to 0.474-0.478 g/g bone respectively). Magnesium levels were higher for those mice fed with short-DP Agave fructans.

Overall, the results confirm that branched fructans from Agave do have an impact on the same health benefit as linear fructans; indicating the potential of Agave fructans as a general supplement or as a new prebiotic with a enormous economical future for Mexico and many Mexican industries. Since this supplement can be incorporate in a wide range of food products like milk products, cereals, ice creams, tortillas, breads, etc.

Health can get a lot easier with supplements such fructans.