FACTSHEET

RESISTANT DEXTRIN

WHAT IS RESISTANT DEXTRIN?

Resistant dextrin is a soluble dietary fiber consisting mainly of linked glucose molecules.

MECHANISM OF ACTION

Resistant dextrin acts as a prebiotic by promoting growth and proliferation of beneficial bacteria that reside in the large intestine.[1, 2] Different bacterial species ferment resistant dextrin, thereby producing health promoting short-chain fatty acids (SCFA).[2]

By binding to receptors in the colon and distant tissues SCFA's may directly or indirectly help control blood sugar levels, induce satiety, and reduce inflammatory tone.[3] Butyrate acts as the preferred nutrient to the endothelial cells in the gut, thus positively influencing the gut barrier.[4]

MAIN SOURCES OF RESISTANT DEXTRIN

Resistant dextrin is produced by heat treatment of starch, followed by adjustment of moisture content in the presence of a food-grade acid. The main plant sources of resistant dextrin are maize and wheat.

ABSORBTION AND METABOLISM OF RESISTANT DEXTRIN

The linear and branched glycosidic linkages of resistant dextrin make it resistant to enzymatic digestion in the small intestine and consequently available for bacterial fermentation by gut microbes in the large intestine. Commensal bacterial genera in the Clostridium cluster XIVa and the Roseburia genus have been reported to selectively ferment resistant dextrin *in vitro*.[5]

WHAT DOES EVIDENCE SAY ABOUT RESISTANT DEXTRIN?

-Resistant dextrin and the metabolic syndrome

Supplementing 17 grams of resistant dextrin twice daily for 12 weeks has been shown to significantly reduce body weight, BMI, body fat percentage and waist circumference in overweight Chinese men under controlled circumstances. These effects were accompanied by a decrease in HOMA-estimated insulin resistance and may be related to a significant decrease in hunger. [6]

In adult females with type 2 diabetes, consumption of 5 grams of resistant dextrin twice daily has been shown to significantly reduce body weight, BMI and fasting plasma glucose.[7]

Consumption of 24 grams of resistant dextrin divided in two daily dosages over 3 weeks suppresses hunger and increases time to hunger after breakfast with 2 hours compared to placebo.[8]

-Resistant dextrin and blood pressure

Consumption of 10 g resistant dextrin daily for 8 weeks was shown to significantly reduce systolic blood pressure in adult women with type 2 diabetes compared to a maltodextrin placebo.[7]

-Resistant dextrin and cholesterol

Two daily dosages of 17 g of resistant dextrin over 12 weeks significantly reduced total cholesterol, LDL and HDL cholesterol in comparison to a maltodextrin placebo in overweight adult males.[6]

-Resistant dextrin and gut health

Supplementing resistant dextrin for two and three weeks has been shown to significantly reduce colonic pH in healthy adults compared to a glucose or maltodextrin placebo at dosages of 20 g and 45 g per day, respectively.[1, 2] *In vitro*, the equivalent of 6 grams of resistant dextrin intake has been shown to reduce pH.[9]

A decrease in colonic pH can inhibit growth of potentially pathogenic bacteria. The reduction of the colonic pathogen, *Clostridium perfringens,* has been confirmed in adult females with moderate intestinal disorders after supplementing 8 grams of resistant dextrin for 2 weeks when compared to placebo.[2]

In a pig model for colitis, resistant dextrin has proven to improve endoscopic and histological colitis scores, as well as downregulate systemic inflammation.[10]

-Resistant dextrin and mineral absorption

It has been reported that colonic uptake of calcium starts about 7 hours after ingestion and represents 4,2 % of total calcium absorption.[11] By increasing calcium availability, enlarging the absorptive surface area and increasing calcium transport across the gut barrier, soluble dietary fibers can increase colonic uptake of calcium and other minerals such as zinc and magnesium.[12-15]

High dosages (100 g/day) of resistant dextrin have been shown to increase apparent absorption of magnesium as well as magnesium retention. A trend towards better calcium retention was also with 100 g/day.[16]

SUPPLEMENTING RESISTANT DEXTRIN: SOURCES, DOSE, TIMING

Resistant dextrin has proven to be well tolerable at dosages up to 45 grams per day.[1, 17] At dosages above 45 grams per day flatulence has been reported to increase to unpleasant levels.[17]

A positive effect of both intestinal health and metabolic health can be achieved by supplementing as little as 8 g of resistant dextrin per day.

For larger effects on both intestinal ecology and metabolic function, higher dosages should be considered.

RESISTANT DEXTRIN AND COOKING

Resistant dextrin has been shown to exhibit good thermal and pH stability and can therefore be used for baking and in low pH solutions.[18]

RISKS AND SIDE EFFECTS

Recently, the soluble fiber inulin was shown to promote cancer growth in the liver of immunodeficient mice at high dosages.[19] This was caused by a build-up of secondary bile acids in the liver. These effects could be reproduced in wild-type mice receiving transplantation of the dysbotic gut flora of the immunodeficient mice.

Primary bile acids are converted by gut bacteria such as those belonging to the Clostridium cluster XIVa.[19] The selective growth of this cluster has also been reported with ingestion of resistant dextrins.[5]

Although bile acids metabolism varies between humans and mice, careful consideration should be taken before supplementing with soluble dietary fibers if severe gut dysbiosis is present.

SUMMARY

Resistant dextrin has been proven to improve metabolic, cardiovascular, and intestinal health in a number of studies. Daily ingestion of 8 – 45 g of resistant dextrin daily is sufficient to promote these effects.

The positive effect seen in individual studies presented here does not represent the truth for all individuals. Thus, comparable studies with the same parameters are needed to confidently say that the measured effect is real and not found by chance. Therefore, we aim to update this factsheet yearly when and if new research is available.

DISCLAIMER

This is factsheet is meant for informative purposes only.

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