



Breaking News on Industrial Baking & Snacks

Fibrous barley and mushroom beta-glucans reduce glycemic response of extruded snacks: Study

By Kacey Culliney , 10-Apr-2013

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Fiber content of extruded snacks can be upped while the glycemic response is lowered with the inclusion of beta-glucan fractions from barley and mushrooms, finds new research.

The study published in the *Journal of Plant Foods for Human Nutrition* found that inclusion of these beta-glucan (β -Glucan) fractions can be utilized by snack firms to increase dietary fiber content while also manipulating the glycemic load (GL) – an estimate of how much the food will raise a person's blood glucose level after consumption taking into account carbohydrate content.

Typically extruded snacks have a high GL content due to the partial gelatinization and fragmentation of starch from the shearing effect of the extruder, said the researchers from Manchester University in the UK.

Reduced glycemic response

However, with the inclusion of beta-glucan fractions for barley and mushrooms, *in vitro* findings showed that the glycemic response could be reduced because the starch digestibility was manipulated and hence the rate of glucose release altered during digestion.

The potential glycemic response was reduced by 20-25% for barley and 17-25% for mushroom beta-glucan fractions.

"Substantial reductions in the in vitro glycemic response (up to 25% compared to the control product) illustrates the possibility of utilizing both barley and mushroom fractions to reduce the energy content of snack foods and help modulate the overall glycemic response," the researchers said.

"This could lead to the further development of functional foods utilizing bioactive substances derived from mushrooms and barley which deliver dietary fiber requirements to the modern consumer," they added.

Fibrous and favorable

The study found that the dietary fiber content of the snacks increased when beta-glucan fractions at 10% levels were used.

Inclusion of 10% barley beta-glucan resulted in a 7.32% increase in total dietary fiber, and use of 10% mushroom beta-glucan a 10.51% rise.

The researchers added that the inclusion increased product expansion which in turn resulted in a reduction of product hardness – a texture often disliked by consumers of extruded snacks.

"Fibers can have a positive effect in making the texture of products more acceptable to consumers and reducing product hardness and increasing expansion. This is consistent with the observed results from the inclusion of barley beta-glucan and mushroom material."

Study details

The control was made up of 65% wheat flour, 20% maize and 15% oatmeal. The barley and mushroom beta-glucan fractions were used to replace part of the wheat flour.

The same researchers put together a [similar study in 2012](#) that concluded use of mushroom waste in extruded snacks could up fiber while reducing glycemic response.

Source: *Journal of Plant Foods for Human Nutrition*

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"*Integration of β -Glucan Fibre Rich Fractions from Barley and Mushrooms to Form Health Extruded Snacks*"

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