

FOR HEALTHY BODIES AND MINDS

# HI-MAIZE™ resistant starch - maintaining glycemic health



Maintaining **healthy blood glucose and insulin levels** is a **rising health focus** for consumers in a world where obesity and diabetes are approaching epidemic proportions.

A great deal of research has shown that increased insulin resistance and the often corresponding elevation of blood glucose levels lead to pre-diabetes conditions. It is also becoming increasingly apparent that preserving glycemic health is important for maintaining overall health and wellness, not just preventing weight gain or diabetes. For young and old alike, it may play a key role in clearer thinking, better focus and improved memory. [To learn more, read on.](#)



## Explaining insulin resistance

Insulin resistance develops when the receptors on the muscle cells and tissues become less sensitive to the effects of insulin. This makes glucose transportation less efficient, so blood sugar levels rise, triggering the body to produce even more insulin.

It becomes particularly problematic in overweight people, causing inflammation which produces more insulin. Over time the body cannot keep up with demand and pre-diabetes may develop. This process also prevents the body using fat as energy. Finding a way to reduce insulin levels and boost fat oxidation could prove valuable in controlling weight and managing blood sugar levels.

Current recommendations for reducing insulin resistance focus on:

- Increasing exercise and activity levels and making it part of everyday life;
- Encouraging weight loss;
- Improving eating habits, including choosing the right types of foods.

## Carbohydrates and blood sugar

The foods we eat impact our blood glucose levels, particularly carbohydrate-based foods. Most carbs break down and are digested quickly in the small intestine, causing a rapid, high rise in blood glucose. This spikes insulin production to help transport the glucose to body's cells, where it's used for energy or stored.

Dietary fibre and resistant starch, on the other hand, are not digested in the small intestine, do not break down into glucose and don't cause insulin secretion. They pass through the small intestine undigested and reach the large intestine. Thus, foods high in dietary fibre or resistant starch produce a lower glycemic response – with a lower rise in blood glucose and insulin levels.

### REFERENCES:

1. Gagnon C, Greenwood CE, Bherer L., *J Clin Exp Neuropsychol*. 2011 Nov; 33(9):972-81.
2. For more detailed references and information, see our White Paper "HI-MAIZE resistant starch and its benefits in Maintaining Glycemic Health" at [apac.ingredion.com/HiMaize](http://apac.ingredion.com/HiMaize)

## Glycemic management and its cognitive benefits

If our bodies do not regulate blood sugar levels effectively, it also affects our ability to concentrate and remember. Increasing evidence suggests that what we eat and how we metabolise food can influence our brain power, both momentarily and in the long term<sup>1</sup>.

These studies indicate that higher increases in blood sugar levels after eating is associated with reduced attention span and poorer working memory. This is an emerging area with exciting possibilities. Work with Ingredion to explore these emerging opportunities further.

## HI-MAIZE™ and blood sugar

HI-MAIZE™ resistant starch helps support healthy blood sugar and insulin levels in three main ways<sup>2</sup>:

- Reducing the glycemic response to foods;
- Improving insulin sensitivity (also referred to as reducing insulin resistance);
- Helping to improve fat metabolism, an underlying glycemic health factor.

When used in place of flour or other rapidly-digested carbohydrates, HI-MAIZE™ lowers the glycemic impact of that food. Using it to replace a greater percentage of the flour will have an even greater affect.

More than 20 human clinical trials have shown the glycemic and short-term insulin response to foods containing HI-MAIZE™ or resistant starch from high amylose corn<sup>2</sup>.

This effect has been recognised by health authorities, with the European Food Safety Authority (EFSA) in 2011 approving the following labelling claim for foods containing at least 14% of total starch as resistant starch:

**"Replacing digestible starch with resistant starch induces a lower blood glucose rise after a meal."**

## Natural HI-MAIZE™ resistant starch

Made from a traditionally bred hybrid of corn that is naturally rich in resistant starch, HI-MAIZE™ invisibly adds fibre and resistant starch to a wide variety of foods including bread, pasta, noodles, snacks and breakfast cereals.

HI-MAIZE™ makes it easier for consumers to boost their fibre and

resistant starch intake – without having to change what they eat. It offers a simple, natural way for food companies to add value, even beyond the benefits traditionally associated with dietary fibre.

The Ingredion team can help with labelling and regulatory advice, as well as share consumer insights to help optimise the success of new or reformulated products. Just contact us now to get started.

## Contact Ingredion to find out how we can help:

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VI-04-14



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