



# LESS ACRYLAMIDE, SAME DELICIOUS FOOD

Novozymes' new enzyme solution, Acrylaway,<sup>®</sup> substantially reduces acrylamide in various food products without changing their flavor or appearance.

Acrylamide, suspected of causing cancer, is formed when starchy foods are baked or fried at high temperatures. Acrylaway is a natural solution to this natural problem – and it works without changing the taste, look, or feel of the final product.

Acrylaway reduces up to 90% of the acrylamide content in food products such as cookies, crackers, crisp bread, and various snacks. One solution for the food industry has so far been to reduce temperatures if possible, but Novozymes went to the root of the problem instead – the amino acid asparagine that leads to the formation of acrylamide in the first place. Novozymes developed a completely new type of commercial

enzyme – an asparaginase – to break down the asparagine. Acrylaway is now being launched after extensive testing.

“Acrylaway has been tested in Novozymes' bakeries, at independent institutes and in the industry on a variety of food products, and all results show that not only is acrylamide substantially reduced, but the end product's flavor, look, and feel are not affected,” says Anett Lund-Nielsen Colstrup, Global Product Launch Manager at Novozymes.

#### **A natural problem**

In 2002, Swedish researchers discovered high levels of the potential carcinogen acrylamide in

many commonly consumed starch-based foods, such as cookies, crackers, snacks, French fries, and crisp bread, which are processed or cooked at high temperatures.

Tests have already determined that acrylamide causes cancer in rats and mice, and tests are being conducted around the world to determine the carcinogenic effects of acrylamide on humans.

#### **A natural solution**

A very effective way to reduce acrylamide formation is the enzymatic removal of the amino acid asparagine, the precursor of acrylamide. The asparaginase Acrylaway operates by converting asparagine into another amino acid, aspartic acid.



**“With this enzyme solution from Novozymes, food manufacturers can now offer end consumers food products with reduced risks and worries regarding acrylamide.”**

Andrew Fordyce, Marketing Director Cereal Food Marketing at Novozymes



Beate Kornbrust, Customer Solutions Manager at Novozymes, tests Acrylaway® in the baking labs at Novozymes Switzerland.



Anett Lund-Nielsen Colstrup is a Global Product Launch Manager at Novozymes and is responsible for launching Acrylaway®.

**Tests have shown that Acrylaway® reduces acrylamide formation in a broad range of products by almost 50-90%.**

Food product	Acrylamide reduction (%)
Biscuits and cookies	50-90%
Crisp bread and toasted bread	50-85%
Crackers	75-85%
Snacks	75-90%

Acrylamide is the product of a Maillard reaction between the amino acid asparagine and a variety of reducing sugars. The sugars react with asparagine when the food is heated and as a result, acrylamide is formed.

Maillard reactions, also known as non-enzymatic browning, typically occur at temperatures above 100 °C (212 °F) and are responsible for important color and flavor development in fried and baked starch products.

“The process that gives the delicious brown crust and fried or baked flavor also creates acrylamide. But with Acrylaway, asparagine is converted to another amino acid, leaving all other ingredients to contribute to the Maillard reactions. You keep the good crust and the taste, and reduce the potentially carcinogenic acrylamide,” says Beate Kornbrust, Customer Solutions Manager at Novozymes.

#### **For the good of the food**

Today’s consumers are health conscious and cautious about what they eat. In the future, health and food quality will become even more important, and enzymes have a key role to play here.

“It is a fundamental need for consumers and society that our food is safe and healthy. With this enzyme solution from Novozymes, food manufacturers can now offer end consumers food products with reduced risks and worries regarding acrylamide,” says Andrew Fordyce, Marketing Director Cereal Food Marketing at Novozymes.

Food manufacturers are showing great interest in Acrylaway and are especially excited about its ability to reduce acrylamide without altering the quality of their finished product.

“The food industry cares about acrylamide and we’ve worked with many industry players during

the development of Acrylaway,” says Andrew Fordyce.

“This is an exciting product launch for us. Acrylaway is an excellent product that works very well to make food safer and healthier.” ■

**FOR MORE INFORMATION**  
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