

REVOLUTION IN FRYING: NEW TECHNOLOGY TO SIGNIFICANTLY REDUCE ACRYLAMIDE FORMATION



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ABSTRACT

The **Agricultural Chemistry Research Group** at the **University of Alicante** has developed additives that, when incorporated into frying oil used for cooking carbohydrate-rich foods, enable a significant reduction in the formation of acrylamide.

This technology represents an innovative and sustainable solution for the food industry, offering multiple benefits for both producers and consumers, ensuring a safer, healthier, and higher-quality product without compromising flavour or texture. Furthermore, its ease of implementation and versatility make it a valuable tool to comply with current regulations and adapt to market demands.

The technology, protected by a patent application, has been developed at a laboratory scale. Companies interested in its commercial exploitation are being sought.

ADVANTAGES AND INNOVATIVE ASPECTS

ADVANTAGES OF THE TECHNOLOGY

The described technology offers numerous advantages, making it a practical and effective solution for reducing acrylamide in fried potatoes:

- **Regulatory compliance and food safety:** The technology enables the reduction of acrylamide concentrations below the limits established by the latest regulatory standards and recommendations from regulatory bodies.
- **Universal versatility:** It is compatible with any type of potato, regardless of its origin, variety, or cut shape.
- **Independence from the type of oil:** Its effectiveness is not affected by the chemical properties of the frying oil used.
- **Energy efficiency:** It does not require adjustments to cooking temperature or time, avoiding increases in energy consumption and maintaining the original characteristics of the potatoes.
- **Minimization of losses:** As it is unnecessary to lower the cooking temperature, production losses during the process are avoided.
- **Same flavour and texture:** It preserves the organoleptic characteristics of the product, preventing potential consumer rejection.
- **Controlled costs:** The reagents used are economical, contributing to minimal impact on production costs.
- **Ease of industrial implementation:** The technology can be easily integrated into industrial processes without incurring high costs or facing scaling difficulties.
- **Increased competitiveness:** It offers a differentiated, high-quality product that meets the demands of a market increasingly focused on safety and health.
- **Wide range of applications:** It is applicable to a variety of fried products beyond potatoes, expanding business opportunities.

INNOVATIVE ASPECTS OF THE TECHNOLOGY

The primary innovative aspect of the technology is the development of new vegetable oils enriched with encapsulated essential oils for use in frying processes, representing a novel approach in the food industry. Although these molecules are already known for their ability to stabilize compounds, their specific application in encapsulating essential oils to reduce acrylamide represents a unique solution.

MARKET APPLICATIONS

The described enriched or additive-enhanced vegetable oil enables the reduction of acrylamide concentration during the frying of carbohydrate-rich foods, such as frying potatoes in slices or sticks, in a pan or fryer, applicable to both restaurants and industrial plants.

Thus, this technology could also be used for:

- The production of other carbohydrate-rich fried snacks;
 - Restaurants and fast-food services;
 - Processing of pre-fried frozen foods; etc.
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COLLABORATION SOUGHT

Companies interested in acquiring this technology for **commercial exploitation** are sought through:

- Patent licensing agreements.
- R&D collaboration agreements to develop the technology according to company needs.
- Scientific-technical advisory services.

Types of companies sought:

- Industrial manufacturers of snacks and fried foods.
 - Suppliers of oils for the food industry.
 - Producers of frozen or pre-cooked foods.
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