



New prebiotics from biomass polysaccharides (hemicelluloses and pectins) for food and feed

Description:

The inventions describe optimized methods for producing purified non-digestible oligosaccharides with prebiotic properties suitable to be used as ingredients for functional foods or feed applications. Starting from a variety of raw materials containing hemicelluloses and/or pectins, the target compounds are obtained by hydrolytic reactions (in autocatalyzed aqueous media and/or in the presence of enzymes), and subjected to physicochemical refining processes to remove undesired byproducts. All the steps are based in sustainable and environmentally friendly technologies. The separation methods are scalable, and the final products show a high degree of purity. The ability of the purified oligosaccharide concentrates for causing prebiotic effects has been confirmed by *in vitro* experiments.



Innovative aspects and advantages:

In comparison with other traditional Non-Digestible Oligosaccharides usually used in diets (for example, fructooligosaccharides), the target products present a number of advantages, including:

- Improved business opportunities, derived from their comparatively high market prices,
- Ability for causing enhanced prebiotic effects at moderate intakes,
- Multifunctional character, owing to their ability to cause healthy biological effects different from the prebiotic ones (for example, immunomodulatory effects, or activities related to the metabolism of saccharides and lipids, resulting in limitation of cardiovascular risk).

Commercial Applications and potential users:

The commercial applications can be envisaged in terms of the purity grade achieved in the refining steps, which defines two types of products: high-purity oligosaccharides (to be used as high added-value ingredients of functional foods), and low-purity oligosaccharide concentrates (to be used as physiologically active feed supplements).

Depending on the purity of the products, which determines the production costs, the potential users can be producers functional foods or feed supplement industries.



Origin of the invention:

The manufacture of prebiotic oligosaccharides from vegetal biomass by hydrolytic processing was first assayed in the EU-FAIR Project “Xylophone”, and further research was developed in the framework of several projects funded by public institutions, as well as contracts with private companies.

State of art:

The reaction and separation methods have been performed both at the laboratory and at the pilot plant scales. This latter type of experimental work has been carried out in the facilities at the “Centro de Investigación, Transferencia e Innovación” (CITI), located in the TECNÓPOLE Technological Park (San Cibrao das Viñas, Ourense, Spain).

Inventors:

Juan Carlos Parajó Liñares, José Luis Alonso González, et al.

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Contacts:

Juan Carlos Parajó Liñares
Phone: +34 988 387 033
jcparajo@uvigo.es

José Luis Alonso González
Phone: +34 988 387 233
xluis@uvigo.es

