

Assessment of the Bifidogenic Potential of Arabinoxylooligosaccharides derived from Wheat Bran

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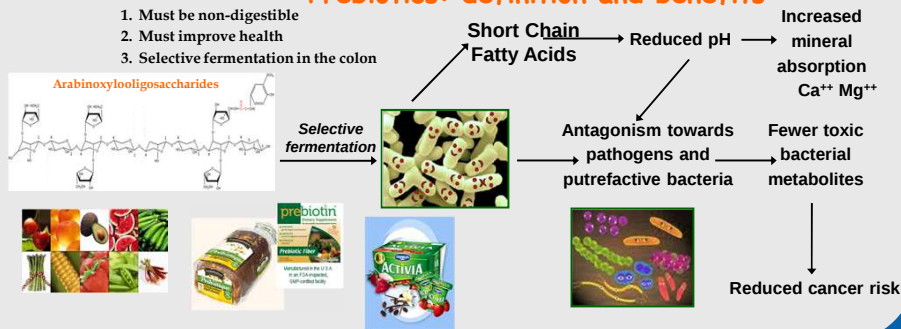
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Background

The importance of human intestinal microbiota in maintaining host health is well known. Probiotics, prebiotics and the combination of these two components (synbiotics) can contribute to support an adequate balance of the bacterial population in the human large intestine.

From a nutritional point of view, Arabinoxylooligosaccharides (AraXOS) are considered as Non Digestible Oligosaccharides and one of its most important features as food ingredients is the ability to stimulate the growth of intestinal bifidobacteria.

Prebiotics: definition and benefits



Experimental

RAW MATERIAL

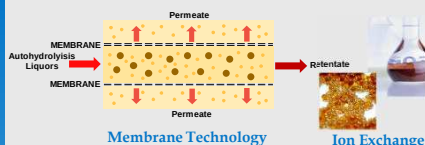
Wheat Bran is a byproduct of wheat flour milling, of a lignocellulosic nature, rich in arabinoxylan

AUTOHYDROLYSIS

Reaction with hot, compressed water and Wheat Bran under optimized conditions

✓Hydrolytic degradation of arabinoxylan into AraXOS
✓Side processes leading undesired compounds: monosaccharides and non-saccharides

REFINING PROCESS



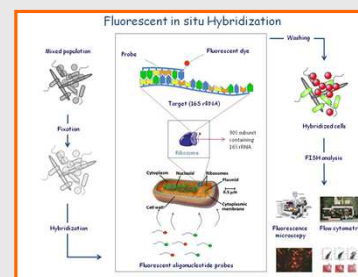
BIOACTIVE COMPOUNDS

Arabinoxylooligosaccharides (AraXOS)
(with similar purity to that of commercially available prebiotics)

In vitro FERMENTABILITY ASSESSMENT



MICROBIOTA ANALYSIS



Results

Composition of the purified mixture of oligosaccharides (OS) from Wheat Bran

Component	Mass fraction (g component/g ¹ NVC)
² GlucOS	0.304
³ XOS	0.362
⁴ AOS	0.169
⁵ AcOS	0.009
⁶ OGaU	0.041
⁷ ONVC	0.049

Total Oligosaccharides (TOS): 88.5% of NVC

¹NVC: Non Volatile Compounds

²GlucOS: Glucooligosaccharides (as glucose)

³XOS: Xylooligosaccharides (as xylose)

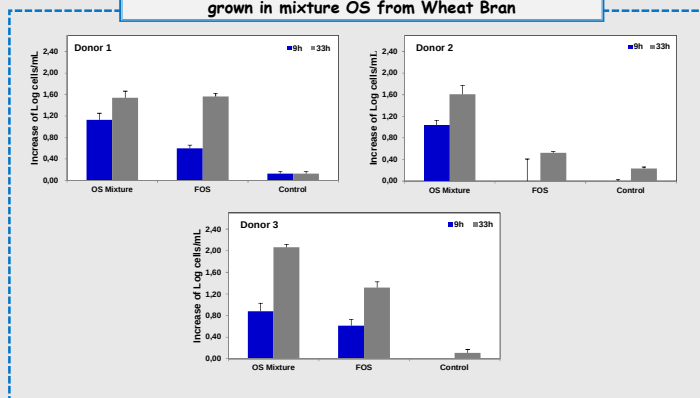
⁴AOS: Arabinooligosaccharides (as arabinose)

⁵AcOS: Acetyl groups linked to oligosaccharides (as acetic acid)

⁶OGaU: Uronic acids linked to oligosaccharides (as uronic acids)

⁷ONVC: Other Non Volatile Compounds

Population Dynamics: *Bifidobacterium* in faecal cultures grown in mixture OS from Wheat Bran



Conclusions

The experimental results confirmed the ability of wheat bran (AraXOS concentrate) to promote the growth of *Bifidobacterium* population acting as carbon sources, leading mainly to the generation of acetic and lactic acid.

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