

FLAX (*LINUM USITATISSIMUM* L.) SEED TEXTURE AGENTS FOR THE PRODUCTION OF FUNCTIONAL FOODS

Surchiceanu Olga, Baerle Alexei, Sturza Rodica

Technical University of Moldova, Chisinau, Republic of Moldova

Baerle Alexei: alexei.baerle@chim.utm.md

Abstract: Flax seeds serve as a good source of both soluble and insoluble dietary fiber. Flaxseed holds a unique place among the oilseeds due to presence of mucilage located in outer layers of the seed. Flaxseed mucilage has gained momentum due to its superb health benefits and potential functional properties. It contains 35–45 % of fibre and two-third is insoluble and one third is soluble fiber. Insoluble fiber consists of cellulose, hemicellulose and lignin. Most of the soluble fiber of flaxseed appears to be the mucilage of seed coat. It makes up 7–20% of seeds weight. Soluble fiber in the form of mucilaginous material consists mainly of water soluble polysaccharides; its recovery and purity vary with the extraction conditions. The water binding capacity of flaxseed mucilage is reported to be about 1600–3000 g of water/ 100 g of solids. High water binding capacity of flaxseed is attributed due to the presence of polysaccharides in the seed coat. Mucilage of flaxseed consists of acidic and neutral polysaccharides. The neutral fraction constitutes arabinoxylan as basic component (more than 12% from seeds weight), and other polysaccharides, formed from fragments of L-arabinose, D-xylose and D-galactose. Acidic fraction contains L-rhamnose, L-fucose, D-galactouronic acid and L-galactose. Functionally, these polysaccharides possess similar properties to guar gum [1]. The mucilage can be extracted by hot water and exhibit good foam-stability and water-retaining properties [2]. The present study is about optimizing the process of obtaining flax seed texture agents and applying them to the production of functional foods. Extraction from integer seeds or from very crushed seeds was inefficient, namely because of excellent capacity of arabinoxylan to absorb and to glue other components and small particles. It has been found that the preparation of arabinoxylan-rich monophasic extracts of polysaccharides is possible with a certain seed pretreatment technology that includes the removal of fat and oil substances, the moderate destruction of the outer coats of the seeds, and counter current extraction with acidulated hot water. The single-phase aqueous extracts of arabinoxylan obtained by us are a promising water-retaining component, and can be used in the development of different baking products, yogurts, vegetarian mayonnaises and sauces.

Keywords: flaxseeds, polysaccharides, arabinoxylan, extraction, health benefits

References

1. Tarpila A, Wennberg T, Tarpila S., *Flaxseed as a functional food*. 2005, *Current Topics in Nutraceutical Research*,; 3. pp. 167–188.
2. Li W., Hu H., Wang Q., Brennan Ch.S., *Molecular Features of Wheat Endosperm Arabinoxylan Inclusion in Functional Bread*. 2013, *Foods*, 2. pp. 225-237.