

Process for the production of soluble and insoluble arabinoxylan from wheat bran

Arabinoxylan (AX) is one of the important dietary fibers found in cereal bran. Several scientific reports clearly demonstrated its benefits to human health. AXs are an important group of non-starch polysaccharides preponderantly present in cereal brans. They are highly branched and composed of β -1,4 linked D-xylopyranose backbone with arabinose in the side chain (Muralikrishna and Subba Rao, 2007). Arabinoxylan is known to have several biological activities, such as antioxidant activity, the prebiotic activity of arabinoxylan oligosaccharides (AXOS), cholesterol-lowering, blood sugar modifier, and immunity enhancer. Wheat bran, as the major processing by-product of wheat, is a mixture of abundant nutrients and bioactive components, including protein (12–16 %), starch (10–18%), lignin (4–8 %), and dietary fiber (36–52%). The main hemicellulose component in wheat bran is AX, accounting for ~26 wt% in dry weight. The current process uses wheat bran as starting material to extract soluble and insoluble arabinoxylan enriched fractions. The product's safety has been studied as per the OECD423 guidelines, and the NOAEL level was found to be 2 g/kg BW. Wheat bran AX was given GRAS status by FDA (21CFR 101.12) in 2014 and European Food Safety Authority (EFSA) approval in 2011. Both the products produced in the current process have more than 65% AX by dry weight. The foil laminated packaging material is suitable for these products, and they have a shelf life of more than one year. The process is cost-effective compared to the existing processes. The process is greener, reagents and equipment used are indigenously available, and have a history of safe use in the Food industries. The raw material, wheat bran, is available in the open market, including global platforms. The dietary fiber market is growing at 12.5% CAGR and has vast applications in different fields. These AX-rich products can be used as ingredient in the following products; Bakery, Breakfast Cereals & Snacks, Confectionery, Dairy, Meat Products, Infant Food, Beverages, pharmaceuticals, and Animal nutrition.