

Valorisation in bread of dietary fibres from by-products of the agro-transformations

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For many years, the Department of Food Technology located at the Agricultural University of Gembloux (Belgium) have been interested in characterizing and valorising dietary fibres like cellulose, hemicelluloses, lignins, resistant starches, pectins, inulins, and many more.

It is well known that the consumption of dietary fibres is recommended for preventing or treating Western diseases including colon cancer, gastrointestinal disorders, diabetes and coronary heart disease. However, current consumption of dietary fibres in Western countries is only about 20g/day.person, while the recommended intake is 30-45g/day.person [Schweizer and Würsch, 1991]. Moreover, dietary fibre intake must be balanced between soluble and insoluble fractions: most cereals are rich in the insoluble dietary fibres fraction, whereas fruits and greens contain more soluble dietary fibres.

The source and process used to recover the fibres have a strong influence on their chemical and physical properties which have a direct impact on the techno-functional properties of the final product and the physiological effects on human health.

By-products from the transformation of agro-production are inexpensive, available in large quantities and have a high dietary fibre content. They are commonly used in the feed or fertilizer industries. So, we are studying the valorisation of such by-product like bran and hulls from local cereals, pea hulls, sugar beet pulp, date seeds and pulp, and other tropical productions, in the food industry.

Here, we present the case of bread enriched by a dietary fibres source from a local cereal by-product and their effects on the final properties of such a product. Enzymatic/chemical – gravimetric methods have been employed to characterize the dietary fibres used in this study. In addition, techno-functional properties like water holding capacity (WHC) and nutritional properties of dietary fibres have been evaluated for determining future application in bakery. Finally, after a evaluation of the hydration of the dough by farinograph, bread-making tests have been realized to determine, the evolution of the crumb firmness, dry matter or the density of breads in the course of time.

Reference

Schweizer, T.F. and Würsch, P. 1991. The physiological and nutritional importance of dietary fibre. Experientia 47, 181-186.