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Development of natural high value nutritional formulations

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Abstract

Initially Moringa leaves have been taken for the fermentation process to evaluate the value of phytates in processed products. Different procedures have been adapted for processing and fermentation of leaves. Along with some already processed food has been evaluated for phytates level. Viz. fresh wheat dough and fresh roties (Indian Bread) and marketed breads has been evaluated for the presence of phytates level. Similarly some more Indian bread made up of fresh dough of maize, barley, qunoa, bajara and jwar (Indian Millets) has been evaluated for phytates levels. The study concluded that there is different type of processing of food which is responsible for the breakdown of phytates (Phytic acid polymer). The more the phytates level in food the less will be its nutritional value but on the other hand as phytates are high in food they do chelation of many toxic compounds and minerals which may trigger mutation in cells and may lead for the development of cancer. The results show that many beneficial ingredients such as dietary fibers, phenolic antioxidants, marine ingredients, and n-3 fatty acids can be used in the bread industry to increase its functionality and result in healthy products, low in calories, cholesterol and celiac disease. Functional and nutritional values of these products can be improved by alternative dietary fibers and protein sources of cereals, tubers, corn gluten, corn germ and rice bran. The functionality increase of breads by replacing dietary fiber with a percentage of flour can lead to breaking of gluten-starch matrix, limiting the gas cells and the increase of dough plasticity. Recent studies on production of mixtures of flour-hydrated fiber have shown that they could be a suitable viscoelastic profile for formulated bread doughs and final bread could have acceptable sensory properties and a favorable shelf life. Curcuminoids are the major biologically active components of turmeric which contain curcumin, bis-demethoxy curcumin, and demethoxy curcumin. Curcumin or phenolic pigment is an effective antioxidant that can absorb free radicals and its use as an antioxidative and antimycotic agent in butter cakes has been reported. Reported that it had other medicinal properties such as anti-protozoal, anti-tumour, anti-inflammatory and anti-venom activities. The results showed that the addition of functional ingredients including fiber-rich compounds and phenolic antioxidants to breads not only had physiological effects on the blood cholesterol levels and preventing cardiovascular diseases, cancers and inflammation, but also had a positive effect on the sensory properties of breads. The functional compounds such as shell of psyllium seeds and prebiotics are consumed in GFB and have a good effect on their quality, safety and acceptability. Also, recent studies have shown that marine foods, flaxseeds and quinoa seeds can be used as a rich source of omega-3 fatty acids and can be incorporated in bakery products, especially breads without much intervention in sensory quality. Further research is needed to understand interactions of functional ingredients with breads constituents and thus to improve their safety in potential industrial applications.

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