EXTENDED ABSTRACT

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Development of natural high value nutritional formulations

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Abstract:

The present study focuses on the development of Moringa leaf nutritional formulations and other traditional foods which are regularly used in India. The study is also focused to understand the food habits and actual requirements of different societies with different geographical region. Initially Moringa leaves were taken to evaluate the value of phytates in processed products for the fermentation process. Different procedures have been adapted for processing and fermentation of leaves. It has been evaluated for phytate level along with some already processed foods. Viz: Viz. The presence of fresh wheat dough and fresh rots (Indian Bread) and marketed breads was assessed for phytate level. Similarly, some more Indian bread consisting of fresh dough of maize, barley, qunoa, bajara and jwar (Indian Millets) was evaluated for levels of phytate.

Not only can functional products be used to address market hunger and fulfill dietary requirements with the requisite nutrients, they can also avoid nutrient-related diseases. Whereas, practical bakery items are becoming increasingly common and typically consumed in homes, industrial canteens, restaurants, etc., with adjuncts. These items are less advanced than goods manufactured from milk. Increasing the functionality of breads by replacing dietary fiber with a percentage of flour can result in breaking of the gluten-starch matrix, limiting the gas cells and increasing the plasticity of dough. Recent studies on the production of flour-hydrated fiber mixtures have shown that they could be an appropriate viscoelastic profile for formulated bread teas and final bread could have acceptable sensory properties and a good shelf life. Fibers can alter the volume of bread loaf, bread crumb softness, bread springiness and loaf firmness, but the degree of alteration depends on the source of the fiber. After reading anecdotal reports of herbal cancer cures online, many people with cancer inquire about herbal medicine as a complementary treatment. One of those herbs, known as the moringa tree, is reported for cancer prevention and cure. Work has studied moringa as a lung, asthma, cardiovascular disease , diabetes and other diseases medication. Moringa is a plant originating in India, but it is grown in tropical and subtropical regions worldwide. There are 13 moringa species that range in scale — from leafy shrubs to tall trees. The most prevalently harvested species, M. Oleifera, this is a small, fast growing tree. Moringa cancer research has been carried out in test tubes and mice but not in humans. Studies with test tubes and mice suggest moringa that kill several different forms of cancer cells, although this has not been verified in human clinical trials. Herbalists used moringa to assist with a number of symptoms, including typical mesothelioma symptoms such as breathing difficulties, cough, and other respiratory problems, according to ethnobotanical reports. Additional research and clinical trials are required to clarify moringa 's potential for cancer prevention and care. Phytats are compounds which occur naturally in many cereals and legumes, including soy. Although phytates are associated with protein, phytate levels do not increase in soy protein products as the protein content increases. Phytats are the primary storing source of phosphorus in legumes, nuts , beans, and grains which travel unabsorbed into the digestive tract because humans lack the phytase enzyme. Such compounds can bind to certain minerals and decrease digestive absorption, but mineral shortages due to phytate intake are rare in developing countries and other food compounds, such as vitamin C, help to improve the absorption of micronutrients. Phytate (inositol hexaphosphate, InsP6) is the primary storage medium of phosphorus (P) and inositol in plants, and is also proposed to store trace elements in plants. Inositol-bound phosphorus, primarily as phytate, accounts for 60-80 percent of total phosphorus in cereals, legumes , nuts, and oilseeds. At lower amounts, phytate also occurs at the roots, tubers, fruits and berries. Phytate or phytic acid is the primary phosphorous storage medium in many plant tissues , particularly bran and seeds. It may form complexes with metals or proteins, and thus reduce their gastrointestinal tract bioavailability. Therefore, phytate is considered a complex of anti-nutrients in oats. Germination has the ability to improve phytase activity and eventual phytate degradation. During germination, the phytate content of oat seeds decreased from 0.35 percent in native seeds to 0.11 percent and this was believed to be attributed to an rise of phytase production as germination progressed. Phytate is often known as an anti-nutritional element because it requires reduced mineral absorption. It is located approximately within the same concentration range in lupin seeds than in other pulses, but is typically smaller than that present in soybeans. The average concentration found in lupin seed is about 0.8 g per 100 g. The phytate: zinc molar ratio, which may be an indicator of zinc bioavailability, is usually lower than in other legume plants, rendering this mineral a safer dietary source for lupin. The enzymatic degradation of phytate in the digestive tract or food products sent for special processing leading to the development of various levels of phosphorylated inositol phosphates. While they do not display mineral chelation activity, some of these derived components can be identified as phytates by non-specific methods. Consequently, to determine the actual importance of food phytate in the daily diet, more detailed knowledge on the composition of inositol phosphate from different food products becomes more important. More recently, due to its antioxidant characteristics, which may be beneficial in counteracting free-radical activity, some attention has been focused on the desirable properties of the phytates. Since some of them are involved in cell signaling pathways, certain biological properties can be extracted from the lower inositol phosphates. Phytate is one of the plant-based diet 's main antinutrient causes, since monogastric animals and human digestive tracts are unable to metabolize phytate. Phytate acts as the main phosphate storage medium in plant seed and is contained in protein storage vacuoles in the aleurone cell layer or in the seed embryo.

The research concluded that there are numerous forms of food processing which are responsible for phytate breakdown (Phytic acid polymer). The higher the amount of phytate in food, the less the nutrient benefit would be, but on the other hand, because phytate is high in food, many toxic compounds and minerals are chelated which can cause cell transformation which can contribute to cancer growth.