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Editorial

Special Issue: Properties and Processing Process of Flour Products

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The development of flour from established native sources to alternative and sustainable sources is increasing as demands for flour products rise due to recent global conflicts. Apart from the processing of flour derived from wheat which is widely used in bakeries, confectionary and other food products, flour is currently produced from lesser-known grains, cereal, fruits, root and tuber crops. However, due largely to the novelty in the application of the flour obtained from these less-known alternative sources, the desirable characteristics of these flours are yet to be ascertained. Flours, irrespective of their botanical sources, are known for their diverse use in the food industry, hence knowledge of the properties of these flour befitting for its application is required. The intended processed products obtained from the flour play a major role in its use, while the food matrix of the flour is another vital factor in its application [1]. It is therefore important that various techniques for the processing and production of flour from diverse sources are studied in order to acquire an understanding of the processes that best suit each flour application. These processing techniques further need to be studied to understand the methods that best retain the appropriate food matrix essential for various food formulations. Processes that best present the desirable techno-functional properties need to be established, while not overlooking the production cost and energy requirements as well as the environmental footprint.

Harvested produce, such as cereal, legumes, fruits, root and tuber crops, have undergone different forms of processing leading to the production of flour required for valorization and other food use. Variations, which could be on a small local scale or at an industrial scale, occur in flour processing, as different processing techniques are used for the flours from different plant sources, depending on their end-use. The outcome of these processing methods include associated changes and impact on the particle size, texture, colour, structure and composition of the flour, leading to differences in their nutritional configuration and functionalities as well as the overall flour end product. Some end products are more appropriate for commercial trade and possess prolonged shelf life as a result of the additional processing involved, while other products are to be consumed immediately after production due to their short shelf life [2]. For example, in the industrial processing of maize, the wet and dry milling approach is used. The wet milling approach leads to the production of primary maize products, such as starch, while the dry milling approach leads to the production of secondary products, such as whole or partially degerminated maize products, which are shelf unstable and thus require further processing [2,3]. This Special Issue on "Properties and Processing Process of Flour Products" examines the various processing methods in the production of flour from different plant sources; their effect on the nutritional composition; microstructure; bioactive compounds; functionality and application in foods; as well as novel methods currently utilized in flour processing. A total of six papers: five original research papers and one review article, are included.

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In this Special Issue, Maphosa et al. [4] describes the thermal behavior, morphology and crystallinity of Bambara groundnut (*Vigna subterranea* (L.) Verdc), a starch-soluble dietary fibre nanocomposite. Maphosa et al. [4] produced a nanocomposite from Bambara groundnut starch and soluble dietary fibre, which was used in stabilizing beverage emulsions at significantly lower concentrations than Bambara groundnut soluble dietary fibre. Arendse and Jideani [5] developed alternative preservatives to sulphite by minimizing the enzymatic browning of dried sliced apples. The study shows that a dipping solution of 2% citric acid in combination with 0.1% leaf extract of *Moringa oleifera* minimized the discolouration of dried apple slices. Adewumi et al. [6] describes the functional properties and amino acid profile of Bambara groundnut and *Moringa oleifera* leaf protein complex. The formation of a protein complex between protein isolates of Bambara groundnut and *Moringa oleifera* leaf confers functional properties on the protein complex required as food supplements, ingredients and raw materials for the food industry. Tafu and Jideani [7] characterized *Moringa oleifera* leaf powder solid dispersions using polyethylene glycols as hydrophilic carriers. It was discovered that *Moringa oleifera* leaf powder solid dispersions exhibited improved solubility and good thermal stability. Jideani et al. [8] investigated the physicochemical, nutritional and sensory properties of non-alcoholic pearl millet beverage enriched with *Moringa oleifera* leaf powder while Udoro et al. [9] describes, through a review of literature, the modifications that occur in the quality attributes of cassava (*Manihot esculenta* Crantz) flour due to different processing techniques. The review further presents different flour products that can be obtained from the diverse processing techniques applied to cassava root.

Flour product application in different food formulations is greatly affected by processing methods. Similarly, the properties of the flour, a principal factor that determines its use, are affected by diverse traditional and industrial processing techniques. This Special Issue presents a summary of the different processing techniques and their effect on the final product. While not exhaustive, it is expected that this Special Issue will inspire more work on the different processing techniques and their effect on final flour products.

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