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Novel Approaches to Utilize Agri-Food Wastes (By-Products) for Potential Food Industrial Applications

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Sustainable use of agri-food industrial wastes and by-products holds high promise for value addition. Going in-line with the global initiatives and the conspicuous concepts proposed by the WHO for food wastes, food security and food sustainability, it is worth exploring valorization of agriculture based wastes and by-products. Wastes and by-products are encountered along the entire agri-food supply chain and can ensue at the 'on farm' or 'off farm' levels (from farm up to the table). Besides, they also contribute to safe disposal issues and environmental pollution related stress. As per the recent FAO report, vegetable wastes have created a significantly higher 'carbon footprint' while fruit wastes occurs as the major 'blue water hotspot', primarily in the industrialized countries of Europe and Asia. Nevertheless, available reports indicate that these wastes/by-products to contain high amounts of bioactive compounds and functional phytonutrients. Further, to technically tap these wastes, novel biotechnological and food processing techniques needs to be adopted with a sustainable approach. As of today, considerable interest has been shown towards recovery, recycling and reuse of agri-wastes and by-products. The present paper aims to summarize the author's contributions towards supporting the 'zero waste concept' with minimal waste generation and maximal utilization of plant based agri-food raw materials. In this paper/presentation, main focus and discussions will be made on the research works undertaken on screening of vegetal wastes (fruits and vegetables), identifying the nutraceutical potential (micro- and macro-nutrients, bioactive compounds, therapeutic activities, etc), and the effective utilization of wastes/by-products in developing novel products for food industrial applications. Apart from presenting interesting results, it is aimed to highlight the existing gaps and future potential on valorization of agri-food wastes/by-products to provide a valuable market niche.

Keywords: Wastes, Sustainable utilization, Valorization, Value addition

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