

A Zero-Waste processing approach for Sweet Potato Tubers

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Abstract

Sweet potato is an important global tuber crop, yet its current industrial utilization remains largely centered starch production, generating substantial underutilized coproducts and waste, including fiber and processing water. In this work, we developed a zero-waste processing method for sweet potato tubers enabling the reclaiming of starch (~14.69% based fresh tuber weight), insoluble fiber (~15.06% based fresh tuber weight), and water soluble nutrients that contains proteins (18.5% dried weight), sugars (14.58% dried weight), phytochemicals (with total phenolics of 1.35 mg GAE/g), and minerals. Based on their compositional characteristics, the starch fraction can be retained as a primary food ingredient, the insoluble fibre-rich fraction can be further developed into high-fiber ingredients, and the water-soluble fraction may be directed toward beverages, fermentation substrates, or nutrient recovery. Overall, our work, if scaled to industry application, will maximize the values of sweet potato tuber processing plant and minimize the negative environmental impacts.

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