

Physico-chemical Characterization of Cookies Enriched with Sugarcane Bagasse Fibers

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Sugarcane cultivation and sugar development processes are mainly located in the Uva Province of Sri Lanka. Sugarcane bagasse is a by-product of sugarcane processing and rich in insoluble dietary fibers. Sugarcane stems are crushed in the treacle, jaggery, and sugar industries to obtain the juice and the remaining plant residues called bagasse. The objective of this study was to develop cookies enriched with sugarcane bagasse fibers as a fiber source with no added sugar. Bagasse (with or without peel) were collected from a jaggery manufacturing plant and they were dried, grinded, and sieved to obtain bagasse powders (moisture content, 3%). The fiber content (%) of bagasse powders with and without peel were 12.43 ± 0.30 and 8.61 ± 0.38 , respectively. Furthermore, the bagasse with peel contained the highest total phenolic content ($1270 \pm 3.36 \mu\text{g GAE/g}$) than bagasse without peel ($721 \mu\text{g GAE/g}$). In addition, water holding capacities of with peel and without peel bagasse were 485.9 ± 29.1 and $804.06 \pm 1.78 \text{ g/100 g}$, respectively. These two types of bagasse powders at 0 (control), 5 and 10 % (w/w) ratios were enriched to develop five types of cookies. According to the sensory evaluation, the 5% bagasse with peel cookies showed the highest overall acceptability than other bagasse enriched cookies but lesser overall acceptability than the control. Moreover, 5% with peel bagasse cookies significantly differ from without peel bagasse cookies in overall acceptability. Collectively, this study suggested the potential application and value-addition of sugarcane bagasse in cookies manufacturing.

Keywords: Sugarcane, Bagasse, By-products, Health foods, Value-addition