

EVALUATION OF DIFFERENT TECHNIQUES FOR REMOVING BITTERNESS IN JACKFRUIT (*Artocarpus heterophyllus*) SEEDS

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Jackfruit seeds are nutritious yet underutilized. This study explored the methods to reduce bitterness in jackfruit seeds which limits further processing. Soaking, roasting, steaming, and boiling treatments with different time durations and different seed coatings were used. The presence of bitterness was assessed with sensory evaluation. Proximate composition, colour and saponin content in treated seeds (TS) and untreated seeds (UTS) were determined qualitatively and quantitatively. String hoppers were prepared with selected treatments to detect the possibility of product development. Untreated seeds with spermoderm (F1) and without spermoderm (F2) were positive for saponin, while the saponin content was $5.28 \pm 0.02\%$ and $5.12 \pm 0.04\%$ respectively. Seeds treated by soaking (48, 60, 72 hours) and roasting (25, 30, 35 minutes/ 160°C) were not successful in removing bitterness. Steaming whole seed with outer testa (S3-55 minutes), with seed spermoderm (S6-55 minutes), without seed spermoderm (S9-25 minutes), and boiling for 50 minutes with outer testa (B3), with seed spermoderm (B6), without seed spermoderm (B9), were not detected for bitterness. In proximate composition, moisture, protein, ash, fat, fibre and carbohydrate were analysed. Whole seed of UTS contained $37.57 \pm 0.96\%$ moisture, $11.39 \pm 0.08\%$ protein, $2.61 \pm 0.17\%$ ash, $3.25 \pm 0.07\%$ fat, $1.54 \pm 0.26\%$ fibre, and $43.6 \pm 1.45\%$ carbohydrates. In TS, S3 had the highest protein ($11.38 \pm 0.02\%$), fat ($3.25 \pm 0.23\%$), fibre ($1.23 \pm 0.08\%$), and ash ($2.37 \pm 0.09\%$), while S9 contained lowest protein ($11.13 \pm 0.07\%$), fat ($3.12 \pm 0.07\%$), fibre ($1.14 \pm 0.02\%$), and ash ($2.22 \pm 0.04\%$) contents. The Saponin content of TS was significantly less than that of UTS. In TS, the lowest ($3.12 \pm 0.03\%$) and highest ($3.28 \pm 0.01\%$) saponin content were in B9 and S3 consecutively. String hoppers were made with the six best samples, and all were accepted in sensory evaluation. In conclusion, steaming whole seeds for 55 minutes can be successfully used to reduce bitterness while keeping a higher nutritional content.

Keywords: Bitterness, Saponin, Sensory evaluation, String hopper