

Optimal Pre-Treatment Processes for Microwavable Puffed Job's Tears Grains

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<https://doi.org/10.12982/CMUJNS.2019.0009>

Received: July 16, 2018

Revised: October 1, 2018

Accepted: October 9, 2018

ABSTRACT

Job's tears (Coix lachryma-jobi L.) grains after puffing, had potential to be used as raw material for snack foods. Puffing job's grains using microwave oven could provide low fat content raw material. This research focused on the pre-treatment processes that affected the expansion and other qualities of Job's tears that were puffed in a microwave oven. Four forms of Job's tears grains were used as raw materials in this research: unpolished black Job's tears (UBJ), polished black Job's tears (PBJ), unpolished white Job's tears (UWJ), and polished white Job's tears (PWJ). The pre-treatment processes consisted of soaking, cooking, and drying, before puffing in a microwave oven. Each process was studied for the optimal conditions. By soaking Job's tears grains in water for 24 hours at room temperature, it was found that the suitable soaking time was 10 hours. This was the minimal soaking time that facilitated constant water uptake. Cooking using the autoclave at 15 psi for 20 minutes was suitable for achieving a good expansion ratio for the microwavable puffed grains. Cooking with this method followed by drying and puffing resulted in the maximal expansion ratio for the puffed product. Drying in the tray dryer at 60°C for about 5.5-6.0 hours until the 8.00-10.60% moisture content was achieved was suitable for pre-treated Job's tears grains. Puffing in a microwave oven at this moisture content level produced puffed Job's tears grains with a high expansion ratio. Based on this study, optimal pre-treatment could be applied to all the forms of studied Job's tears.

Keywords: Job's tears grains, Puffed Job's tears, Microwave oven, Expansion ratio, Pre-treatment process