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DEVELOPMENT OF A READY-TO-SERVE BEVERAGE FROM *Aloe vera* (L.) Burm.f. WITH MAXIMUM ELIMINATION OF ALOIN AND MINIMUM PROCESSING STEPS

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Aloe vera (L.) Burm.f., has been well known as a miracle plant due to its remarkable therapeutic properties. Aloe gel possesses over 200 nutrients including acemannan, the major bioactive mucopolysaccharide, which contributes to many health beneficial effects such as anti-diabetic effect. Aloe gel has been extensively used as a functional ingredient in food and beverage production. However, aloin, an anthrone compound, found just beneath the skin of the leaves has been proven to possess laxative activity and bitterness. The objectives of this study were to eliminate aloin, determine the best process formulation of an aloe based ready-to-serve beverage with crushed aloe gel particles and assess its shelf life.

To eliminate aloin from aloe gel, a water treatment method was established, determining the residual aloin by spectrophotometry. To get the best mouth feel of the product and to preserve acemannan, a pectinase enzyme treatment and two different pasteurization conditions; high temperature short time (HTST) and low temperature long time (LTLT) were carried out. Preference tests, based on texture, flavour, aroma and overall acceptability were conducted on the beverage at different steps of developing the product. Initially, the effect of possible combinations of the thermal treatments were tested by spectrophotometry, based on acemannan preservation. Thereafter, suitability of a stabilizer and its optimum concentration, for dispersion of aloe crushed gel in the beverage was tested. Proportions of crushed aloe gel particles, sugar and acidulants were determined by conducting ranking tests based on sensory qualities. The shelf life of the product was assessed based on physico-chemical, sensory and microbiological qualities.

Established water treatment was found to retain 0.73 ± 0.12 ppm aloin in the final product. One hundred mg/dm³ pectinase was the most acceptable. Gellan gum dispersed aloe crushed gel at 0.02% w/v and thereafter. HTST pasteurization was the most acceptable based on sensory qualities and desired shelf life. The absorbances intended for acemannan were significantly ($p < 0.05$) higher in HTST pasteurization followed by pectinase enzyme treatment. The beverage developed by incorporating 10% aloe gel, 9% sugar and 0.01% citric acid was the most acceptable formula based on sensory qualities. pH, titratable acidity, total soluble solid and turbidity of the beverage were 3.44 ± 0.02 , $0.42 \pm 0.03\%$ w/v as citric acid, 9.33 °Brix and 19.9 ± 1.1 NTU, respectively. The shelf life was nine months at ambient temperature (27 ± 2 °C). Hence, the developed formula is satisfactory, assessment of the effectiveness of the anti-diabetic activity by *in vivo* studies is important by modifying an anti-diabetic formula.

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