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Development of ready-to-serve Aloe vera (*Alloe barbadensis* Mill) beverage

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Food and beverage which have physiological benefits beyond basic nutrition is preferred as they reduce the risk of chronic disease and prevent various ailments ranging from heart disease to cancer. Alloe vera is a spiky cactus like xerophytes, which produces large basal leaves. The leaves contain inner parenchyma cells or gel of the leaf under the rind. The gel comprises both mono and long chain polysaccharides and shows anti-allergic effects, anti-diabetic effects, decreases blood lipids levels, supports digestive system health and treats constipation. A study was carried out to develop a ready to serve Alloe vera natural colour beverage that can be consumed as a health drink. Fresh Alloe vera leaves were washed with portable water, in 150 ppm chlorinated water and again with potable water. The bottom parts of the leaves were cut and lines were marked on the leaves with a sharp knife. Leaves were placed in an upright position inside a bucket overnight to remove bitterness. Leaves were peeled and the gel was removed using a cleaned sharp knife. Gel parts were cut into tiny pieces and mixed with citric acid. Gel pieces were washed with water and blended to obtain juice. The resulting juice was strained and heated while stirring. Sugar was added to the heated juice. Citric acid was added to maintain the pH below 3.5. Sodium metabisuphite 50 mg/kg was added and mixed well. Cleaned glass bottles and caps were rinsed with hot water (~ 80 ºC) and drained. The heated juice (~80 ºC) was filled into bottles (200 ml) and capped. The sealed bottles were kept in a water bath at 80 ºC for 20 minutes and cooled to room temperature. Chemical characteristics of total soluble solids content, pH, energy value, moisture, total sugars, protein, fat, fiber, and ash and calcium contents were determined. The quality of the finished product was maintained according to the requirements of SLS 729:2010. The products were stored under room temperature (30 ± 2 ºC), refrigeration (10 ºC) and the reference products were frozen. Changes in total soluble solids, pH, and colour of the product tested within a six month period (tested at one month intervals) were found to be in the accepted range. The product was tested for sensory and microbiological parameters initially at one month intervals. The sensory quality attributes of the refrigerated product is significantly superior ($p < 0.05$) to the product stored at room temperature. There was no significant difference ($p > 0.05$) between the sensory quality attributes of the refrigerated product and the above up to a six month shelf life duration. Aerobic plate counts, yeasts and moulds, coli forms and *E coli* counts were in the accepted range during the six month shelf life period. Results showed that the developed natural colour ready-to-serve Alloe vera beverage stored under refrigeration at 10 ºC up to six months can be used as a health beverage. Non-thermal techniques of micro filtration, ultrasonic treatments and cryogenic processing are being tested to maintain the therapeutic effect of Alloe vera gel and overall juice quality.

Keywords: Alloe vera, thermal processing, ready-to-serve beverage

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