

**POTENTIAL FOR OSMOTIC DEHYDRATION OF
ALOE VERA (L.) BURM. F. GEL**

**W.N.R.P.M. Isurini¹, C.K. Illeperuma^{2*}, M.M.A.N. Navaratne³ and
K.F.S.T. Silva⁴**

¹ *Postgraduate Institute of Science, University of Peradeniya, Sri Lanka*

² *Department of Food Science and Technology, Faculty of Agriculture,
University of Peradeniya, Sri Lanka*

³ *Department of Chemistry, Faculty of Science, University of Peradeniya, Sri Lanka*

⁴ *Department of Animal Science, Faculty of Agriculture, University of Peradeniya,
Sri Lanka*

**chamarai@pdn.ac.lk*

Aloe gel is widely used as an ingredient in food processing as it contains functional polysaccharides like acemannan and pectin. However, presence of aloin and high moisture limits its use. In the present study, the effect of osmotic dehydration (OD) on moisture and aloin removal, and acemannan and low methoxy pectin (LMP) contents of aloe gel was investigated.

Aloe gel cubes (1 cm³) were immersed in 30, 40 and 50 °Brix sugar for 4 h. The ratio of sugar syrup to gel was 5 to 1. The effect of solute concentration on moisture and aloin removal, and sugar gain was investigated. Moisture content was determined by the oven drying method, aloin content by UV spectrophotometry at 354 nm λ_{max} and the sugar gain by measuring the total soluble solids (TSS). The gel cubes were immersed in 50 °Brix maintained at 26, 40, 50 and 60°C for 4 h. The effects of temperature on moisture removal, sugar gain, and acemannan and LMP contents of the gel were determined. Acemannan content was determined by UV spectrophotometry at 540 nm λ_{max} . LMP content was determined by extracting it from acidified gel (pH 3.2) with four volumes of 95% ethanol followed by sequential extraction at RT and 80°C with 25 mmol dm⁻³ EDTA (pH 7 – 8) and centrifugation (500xg, 15 min), and taking the dry weight of the precipitated LMP after washing it twice with 75% ethanol.

Solute concentration significantly ($P < 0.05$) affected moisture and aloin removal, and sugar gain during OD. Moisture content (%), aloin content (10⁻³ %) and TSS (°Brix) of the gel subjected to OD in 50 °Brix sugar were 77.0±0.7, 0.33±0.01 and 24.3±0.9 respectively. Moisture content and sugar gain increased and acemannan and LMP contents decreased with increase in osmoticum temperature. Osmotic dehydration in 50 °Brix sugar at 40°C reduced the moisture, acemannan and LMP contents by 26.4, 9.68 and 1.59%, respectively. The gel subjected to OD in 50 °Brix sugar at 40°C contained 72.3% moisture, 25.2 °Brix TSS, 2.47% LMP, 0.56% acemannan and 0.03 x 10⁻⁴ % aloin. As OD of aloe gel in 50 °Brix at 40°C removes aloin below the maximum level allowed in food while reducing the moisture content by 26.4%, the osmotically dehydrated gel can be recommended as an ingredient in food processing. Moreover, presence of acemannan and LMP in the osmotically dehydrated gel can contribute to value addition of foods.

Financial assistance given by the University of Peradeniya (RG/2012/03/Ag) and Higher Education for Twenty first Century (HETC) Window-4 Project, is acknowledged.