

## ABSTRACT

**Preservation and Processing of the Leaves of the Dasheen Plant  
(*Colocasia esculenta* Linn. Schott var *esculenta*)  
and shado beni (*Eryngium foetidum* Linn.)  
Through Refrigeration and Dehydration**

**Vashti Maharaj**

The effects of refrigerated storage temperatures (3°C, 10°C, 17°C) and packaging on the extension of the postharvest shelf-life of freshly harvested leaves of the dasheen plant (*Colocasia esculenta* Linn. Schott var *esculenta*), a vegetable and the herb, shado beni (*Eryngium foetidum* Linn.) were examined. Both crops were saleable for up to 16 days if packaged in unsealed, 1 mil, transparent, low density polyethylene bags and held at 10°C.

In an attempt to develop dehydrated products, the effects of drying air temperature, drying convection mode and blanching treatments followed by air drying (55°C - 60°C) on the drying behaviour and final product quality were studied.

The solar drying potential and the resulting quality of the two commodities when dried in direct and indirect solar cabinet dryers were also investigated. Due to

the slightly higher temperature (ca 4°C) in the direct, solar cabinet dryer, the drying rates of both crops were marginally higher compared to that dried in the indirect drier and product quality, in terms of colour and volatile oil content (herb) was reduced in the direct drier.

Irrespective of the variables examined, drying of both commodities occurred in the falling-rate period. Compared to the unblanched produce and irrespective of the convection mode, the drying rate behaviour was unaffected by steam blanching. Drying rate however, increased for the water and magnesium carbonate blanched herb while for dasheen leaves, the drying rate was reduced by these pre-drying treatments. To determine suitable conditions for reconstitution, the water absorption kinetics of the dasheen leaves at 60 - 100°C were studied using Peleg's equation. Irrespective of hydration temperature, Peleg's  $K_2$  constant was considerably lower for the magnesium carbonate blanched-infused leaves. For all treatments, the hydration rate increased with temperature and was highest for the alkali blanched-infused treated leaves.

Compared to natural convection, forced convection drying of both commodities reduced losses of the green colour, ascorbic acid content (dasheen leaves) and essential oil content (shado beni). Loss of green colour was considerably reduced by blanching in water or magnesium carbonate prior to drying. When rehydrated at 100°C, the texture, flavour and overall acceptability of such treated dasheen leaves were comparable to the freshly harvested leaves. Water blanched, dried shado beni was highly favoured by a consumer panel. The results indicate that acceptable dried products can be prepared from the leaves of the dasheen plant and shado beni.