

A B S T R A C T

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Sorrel (*Hibiscus sabdariffa* L.) is cultivated in the West Indies for the calyx which is used to make a refreshing drink. The fruit, however, is only available in its fresh state for four months of the year. Drying sorrel would make it available throughout the year. A programme of experimental work was therefore carried out in order to determine the drying characteristics of sorrel and to evaluate the effect of drying on the extract properties of the calyx.

Thus, the effect of drying air temperature ($43-80^{\circ}\text{C}$), and velocity ($0.3-1.1\text{ m/s}$), on the drying rate of sorrel was investigated. The effect of temperature was found to be more pronounced but drying rate was also significantly affected by air velocity.

Intercellular liquid diffusion was assumed to be the most important means of moisture transfer. The drying process was divided into three periods, and an empirical relationship for the drying constant as a function of air temperature and velocity developed.

This relationship was used to generate data which showed close agreement to experimental values.

Sections of the calyx at various stages of drying were examined and the effects of drying as well as the features which affected the drying rate observed. An attempt was made to link these observations to the drying mechanism proposed.

The moisture isotherms under normally expected storage conditions were successfully investigated. Hysteresis was found to be approximately 0.5% m.c. wet basis. Storage above a relative humidity of 80% gave rise to mould growth.

Two types of driers deemed to be appropriate for the drying of sorrel were tested and found suitable. The wire basket drier is projected for use by small farmers.

Finally, the effect of drying air temperature on the colour and acidity of the sorrel extract was investigated, including the effect of twelve months storage.

On the basis of the results obtained the commercial drying of sorrel is projected. It is proposed, that

the dried sorrel be either marketed for domestic use, or substituted in the factory operation after the end of the harvesting season.

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