

Heat pump drying of safed musli (*Chlorophytum borivilianum*) roots

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■ **ABSTRACT** : Thin layer drying experiments under controlled conditions were conducted for safed musli roots in heat pump dryer at 30, 35, 40 and 45°C and hot air dryer at 35, 40 and 45°C with relative humidity's ranging from 19 to 55%. The two-term model showed goodness of fit for drying of safed musli root at 35, 40 and 45°C in HPD and HAD where as logarithmic model showed goodness of fit at 30°C in HPD. The effective moisture diffusivity was observed to increase with the increase in drying air temperature and ranged from 2.23010×10^{-7} to 4.43057×10^{-7} m²/s. The SMER value of heat pump dried product (1.44 kg/h) was more as compared to hot air dryer (1.2 kg/h) at 45°C due to lower relative humidity of the drying air in the heat pump dryer. The retention of total carbohydrate content and protein content was observed to be more in heat pump dried samples with higher rehydration ratio and sensory scores. Keeping in a view, the energy consumption and quality attributes of dehydrated products, it is proposed to dry safed musli roots which was KMS treated with at 30°C in heat pump dryer.

■ **KEY WORDS** : Drying, Heat pump dryer, Tray dryer, Safed musli, Modeling

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