RESEARCH PAPER | International Journal of Agricultural Engineering | Volume 10 | Issue 1 | April, 2017 | 191-198
e ISSN–0976–7223 ■ Visit us : *www.researchjournal.co.in* ■ DOI: 10.15740/HAS/IJAE/10.1/191-198

Effect of spray drying conditions and feed composition on sweet orange juice powder

■ H.S. SATHYASHREE AND C.T. RAMACHANDRA

Received : 17.01.2017; **Revised :** 19.03.2017; **Accepted :** 27.03.2017

See end of the Paper for authors' affiliation

Correspondence to :

H.S. SATHYASHREE
Department of Food Technology, University of Agricultural Sciences, College of Rural Home Science, DHARWAD (KARNATAKA) INDIA
Email : sathyashree931@gmail.com

■ **ABSTRACT :** The aim of this work was to study the influence of inlet air temperature and maltodextrin concentration on functional properties, microstructure and heat utilization efficiency of sweet orange juice powder by spray drying. The inlet air temperature of 130, 140 and 150 °C and maltodextrin concentration of 6 per cent, 9 per cent and 12 per cent were chosen as independent variables to produce the spray dried sweet orange juice powder. The mean value of functional properties of spray dried sweet orange juice powder *viz.*, flowability, cohesiveness, ascorbic acid and radical scavenging activity were 21.42-16.00, 1.19-1.25, 74.20-68.88 mg.100g^{-1} and 21.54-23.19 mg.g^{-1}, respectively, which were significantly affected ($p \leq 0.05$) by inlet air temperature and maltodextrin concentration. SEM analysis shown that surface was smooth with irregular shaped particles with complex link bridge. The heat utilization efficiency was done using MATLAB software. The maximum heat utilization efficiency (50.43%) of spray dryer was obtained at inlet air temperature of 130 °C with 9 per cent maltodextrin concentration.

■ **KEY WORDS :** Spray dryer, Sweet orange juice powder, Maltodextrin concentration, Inlet air temperature, SEM, MATLAB

■ **HOW TO CITE THIS PAPER :** Sathyashree, H.S. and Ramachandra, C.T. (2017). Effect of spray drying conditions and feed composition on sweet orange juice powder. *Internat. J. Agric. Engg.*, **10**(1) : 191-198, **DOI: 10.15740/HAS/IJAE/10.1/191-198.**