

## **Effects of drying methods on the physicochemical properties of powder made from different parts of pumpkin**

### **ABSTRACT**

Pumpkin (*Cucurbita* sp.) is a widely consumed fruit as it has high carotenoid content and medicinal value, but has a relatively short shelf life and prone to microbial spoilage. Various drying techniques have been introduced to the industry to preserve pumpkin-based products. During the drying process, products are prone to serious decay caused by changes in temperature, thus affecting the physical or chemical properties of the product. The objective of this study was to determine the effects of different drying methods on the physical properties and proximate composition of pumpkin powder produced from different parts of the fruit. Samples were made using unpeeled pumpkin and parts of the fruit, i.e. skin, flesh and seed and were dried using different drying methods, i.e. oven (80°C), rapid hot air oven (80°C) and freeze dryer (-110°C). The dried samples were then milled and sieved at approximately 250 µm and 710 µm in diameter. Different drying methods had a significant influence on the physical and chemical properties of the samples ( $p < 0.05$ ). Rapid hot air drying showed a promising impact on the production of pumpkin powder resulting in powder with a moisture content of 5.61-6.89%, particle size of 122.98-256.46 µm, and density of 304.80-724.69 kg/m<sup>3</sup>. These results were better than freeze-dried powders. Proximate composition values of samples dried using rapid hot air were also found to be better than oven-dried powder with a protein content of 9.86-31.54% and fat content of 3.88-34.93%. In conclusion, rapid hot air-dried powder showed the best quality in terms of physical properties and proximate composition.

**Keyword:** Rapid hot air drying; Pumpkin powder; Freeze-drying