



# Agricultural Journals

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# **Czech J. Food Sci.**

## **Çelen S., Kahveci K.:**

## **Microwave drying**

# behaviour of tomato slices

Czech J. Food Sci., 31 (2013): 132-138

The microwave drying behaviour of tomato slices was investigated experimentally to determine the effects of microwave power on the drying rate, energy consumption, and dried product quality in terms of colour, and a theoretical model was proposed to define the drying curves of tomato slices. The experiments performed with the microwave power of 90, 180, 360, and 600 W indicate that the drying time and the energy consumption decreased considerably with an increase in microwave power. The experiments also revealed that the drying rate shows first an increase and then a decrease during drying, and that the colour quality of the product deteriorates significantly with the increase of the microwave power. A theoretical model was developed using the solution of energy equation considering the microwave power as an internal heat source. The electric field strength inside the material was assumed

to be dependent on the moisture content and the constants emerging from this assumption were obtained by minimising the sum of squared differences between the theoretical results and experimental data obtained for various drying conditions. The results show that the values proposed for the constants provide a good agreement between the theoretical and experimental drying behaviour.

### **Keywords:**

drying rate; diffusion moisture content; colour analysis

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