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Effect of Microwave Heating on Flavour Generation and Food Processing


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1. Introduction

The flavour and colour of a food product have significant impacts on consumer acceptability. Two of the challenges with microwave food products are that it is often difficult to achieve the desired flavour that matches products prepared in a conventional oven or by frying and to get the browning that the consumer expects. There are reactions that occur in those processes that do not occur when foods are heated in the microwave oven and this is part of what contributes to the lack of flavour and colour development. In trying to solve the flavour issues, it is important to understand what flavours are as well as all of the attributes of a food product that lead to consumer liking. Solving the colour problem involves an understanding of the reactions that produce colour and finding ways to get those reactions to occur. The typical browning which occurs when foods are heated by conventional means produces not only the desired brown pigments but also produces a variety of desirable flavours.

Flavours and colours generated as a result of the Maillard reaction are of critical importance for the commercial success of microwave-processed foods. Recent interest in the microwave generation of Maillard flavours and colours was a response on the part of the food industry, based on the consumer demand for fast and convenient food products. The fundamental differences between microwave and conventional heating, the composition of the food matrix, and the design of microwave ovens all seem to play a role in the inability of microwave heating to propagate colour and flavouring Maillard reactions in food products. The increased sales of microwave ovens in the last decade, especially into the North American market, provided the food industry with the impetus for renewed interest in carrying out the Maillard reaction in microwaveable food products.
The Development and Application of Microwave Heating


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