Title Effect of thermal processing on tristimulus colour changes of fruits

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Abstract

Purpose of review: Colour is an important attribute because it is usually the first property the consumer observes. Various factors are responsible for loss of colour during the processing of food products. This review covers the latest research on visual (tristimulus) colour change of whole fruit, fruit pulp, puree and concentrate during thermal processing such as drying and pasteurisation.

Findings: The visual colour of fruits and their products changed significantly regardless of the processing method applied. This change was basically attributed to non-enzymatic browning. Osmotically pre-treated samples exhibited less colour change during drying. However, vacuum- and microwave-dried samples suffered extensive browning.

Direction for future research: In general, fruits have been suggested to offer health benefits beyond basic nutritional requirements. The benefit comes from the natural antioxidants they contain. Care must be taken during thermal treatment in such a way as to minimise antioxidant deterioration and colour change. Further research is required on quantitative determination of pigment destruction, and reactions involving phenolic substances and proteins in order to establish relationships with the tristimulus colour parameters L, a and b. Further research needs to focus on enzymatic activity and destruction of vitamin C in order to identify whether colour change is enzymatic or non-enzymatic. Thus, process parameters could be optimised.