

Effect of Thermal Processing on Food Allergens

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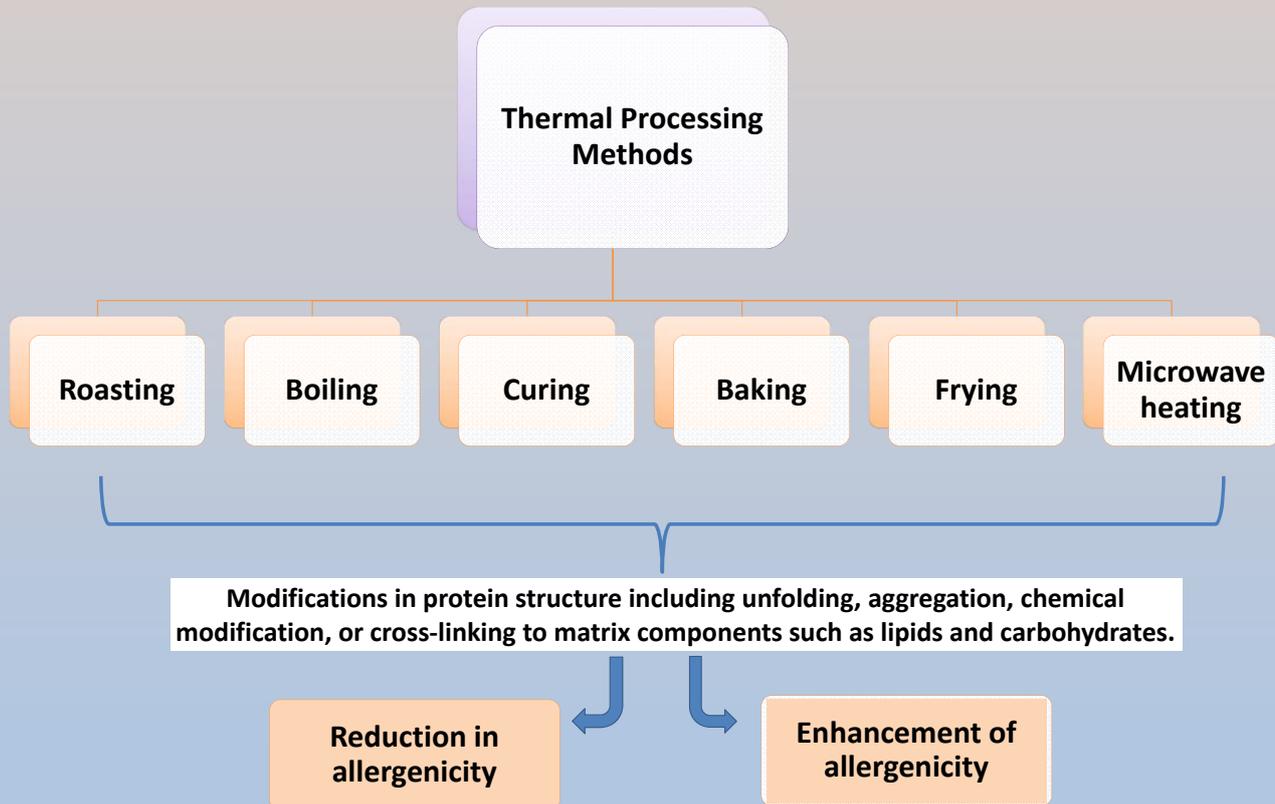
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Overview

Food processing has the potential to alter the allergenicity of foods. There are several processing methods that influence the allergenic properties of foods; thermal processing, fermentation, hydrolysis, ultrasonication, irradiation, high pressure processing, etc. Depending on the processing method, processing conditions and the food structure, partial or complete removal of the offending allergen may be possible. Thermal treatments are perhaps the most widely used group of food processing methods applied to food to keep or improve microbiological quality or to process the food.



Conclusions

Thermal treatment is commonly applied to many allergenic ingredients, in particular to milk, egg, tree nuts, soybean, wheat. The degree of structural changes of proteins occurring during heating depends on both the type of protein and the thermal load. While pasteurisation increases allergenicity of milk as measured by IgE binding studies, possibly due to aggregation, the decrease in IgE binding capacity caused by sterilisation can be explained by denaturation and Maillard reaction of existing epitopes of both β -lactoglobulin and α -lactalbumin. On the other hand thermal processing may reduce allergenicity of PR-10 proteins in hazelnut and almond, in contrast to nsLTPs and seed storage proteins. As a consequence, thermal processing will have several effects on the proteins allergenicity by either reducing or enhancing depending on the processing method, the applied conditions and protein structure.

References

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