Optimisation of protein-fortified beef patties targeted to the needs of older adults: a mixture design approach

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Optimisation of protein-fortified beef patties targeted to the needs of older adults: a mixture design approach

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Abstract

Mixture design was used to technologically optimise inclusions of protein ingredients [rice protein (RP) 0-10%, and lentil flour (LF) 0-10%] in fortified beef patties [meat (M) 90-100%] to ensure acceptable technological and sensorial properties. 17 formulations were generated. Composition, texture parameters, colour, lipid oxidation, microbiological and sensorial parameters were assessed. Maximal predicted protein content was 28.7% ($P < 0.01$) which positively correlated with RP, but not LF. Models showed that LF inclusion correlated with improved texture and also reduced cook loss. Two optimised formulations (OF1 and OF2), for protein content and technological performance, were experimentally validated. Sensory panellists scored the optimised formulations higher than controls for tenderness and beef aroma ($P < 0.05$). This presents an opportunity to produce protein fortified beef patties with softer