

Looking for a compromise to supplement beef burgers with fava bean (*Vicia fava*) flour

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Plant-based proteins are rapidly becoming mainstream ingredients for the rapidly growing global population (Mintel, 2013). Their use in restructured beef products has increased in the last years due to its ability to improve cooking yields, water/fat binding capacity, and sliceability (Baugreet et al., 2019). Additionally, plant-based proteins must contribute to the nutritional and sensorial characteristics of the final product. In this sense, some undesirable effects, such as the perception of bitter and astringent tastes or grassy and beany notes, have also been observed on the organoleptic profile of meat products when plant-based proteins were used (Peng et al., 1982). Thus, this work aimed to evaluate the level of burgers supplementation with fava bean (*Vicia fava*) flour to avoid an undesirable effect on their sensory properties. Beef burgers were supplemented with different amounts of flour: 0, 10, 15, and 20% (w/w) and cooked for core temperature 70°C. To test the sensory acceptance of the final product, a trained panel composed of 5 judges, whose ages ranged between 20 and 60 years-old, tested the burgers presented in a random order. Tests were run on a 9-point hedonic scale (1 = dislike very much, 9 = like very much) (UNE-ISO 4121:2003). The following sensory parameters were evaluated: flavour, tenderness, and juiciness; due to their relevance on the supplemented products. Each sample was given to panellists at room temperature and was coded with three arbitrary numbers. A one-way ANOVA test, followed by Tukey-Kramer post-hoc test, was performed to evaluate differences among samples and were considered statistically significant at $p < 0.05$. Results showed that the supplementation of beef burgers with 10% of fava bean flour did not alter samples' flavour and tenderness compared to the control burger, whereas juiciness was significantly ($p < 0.05$) different. Remarkably, samples containing 15% and 20% of fava bean flour scored significantly ($p < 0.05$) lower for the juiciness attribute, negatively affecting food perception. Hence, these results indicate that supplementing restructured beef products with 10% (w/w) of fava bean (*Vicia fava*) flour allow reducing the level of animal protein without having any adverse organoleptic effect.