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Extrusion texturization of cricket flour (*Acheta domestiscus*) and soy protein isolate: influence of insect content, extrusion temperature and moisture level on extruder response and texture properties

Anna Martin[1], Samuel Kiiru[2], Raffael Osen[1], Anna-Kristina Marel[2]

[1]Fraunhofer Institute for Process Engineering and Packaging, Giggenhauser Straße 35, 85356 Freising, Germany
[2]Max-Rubner-Institut Federal Research Institute of Nutrition and Food, Department of Food Technology and Bioprocess Engineering, Haid-und-Neu-Str. 9, 76131 Karlsruhe, Germany

Corresponding author: anna.martin@ivv.fraunhofer.de

Due to the increasing global population, the demand for further sustainable protein sources ascends constantly. Therefore, insects have become interesting as food ingredients, since they contain valuable amounts of protein and fat, have a comparatively low negative impact on the environment and the area required for cultivation is rather small. One possibility to include insects in the human diet is in the form of meat analogues that are produced using extrusion cooking. A potential species for the application in food is cricket (*Acheta domesticus*).

As cricket flour has only scarcely been investigated as biomass for meat substitutes, the aim of this research was to explore the potential use of cricket flour as protein-rich ingredient for the development of high quality extruded products. For that purpose, the impact of cricket inclusion levels, extruder barrel temperature and moisture content on extrusion system parameters and product properties (e.g. texture) were systematically evaluated.

Cricket flour levels of 15, 30 and 45 g/100g (defatted and undefatted) were combined with soy protein isolate and extruded on a laboratory co-rotating twin-screw extruder with a throughput of 1 kg/h at 150 rpm screw speed. Cooking temperature (120-160 °C) and moisture level was varied. Texture was evaluated by texture profile analysis and fiber formation was monitored by assessment of the cutting strength of extrudates.

The amount of added cricket flour as well as extrusion temperature had significant effects on texture properties and fiber formation in extrudates.