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Analysis of Nutritional Composition of Edible Insects to Enhance Nutritional Security in Sub-Saharan Africa (EntoNutri)

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Abstract

While insects are a relatively new food item in western societies, they form an integral part of many Asian, Latin American and African cuisines. In Kenya and Uganda for example, edible insects already make up 5–10 % of the total protein intake and trade in edible insects is a major source of income, especially in rural areas. Therefore edible insects have the potential to play a vital role for food and nutrition security in both countries. However there is little knowledge on sustainable rearing and harvesting techniques. Furthermore, insects and their feed can be contaminated by heavy metals or insecticides. EntoNutri is a multinational, multidisciplinary project whose goal is to improve food and nutrition security as well as the economic wellbeing of rural and urban communities, particularly smallholders, women and youth through the development, dissemination and promotion of environmentally sustainable insect-based technologies to enhance productivity and consumption of insects as food. The Food Security Center (FSC) of the University of Hohenheim is also a partner in this project. The FSC's specific project goal is to establish the nutritional profile of target insect species along the process chain, with special focus on the micronutrient composition, as the possible contribution of insects to the micronutrient intake of their consumers is not well known. Therefore long horned grasshoppers (*Ruspolia differens*) from Uganda, as well as crickets (*Gryllus bimaculatus*) and several kinds of caterpillars (*Imbrasia zambesina, Cirina forda*) from Kenya, were collected in the respective country. If available, samples were collected fresh and in various kinds of processing e.g. boiled or fried. If the sample was only available in one of the respective forms only the available form was sampled. The samples will be analysed for their content of riboflavin, niacin, vitamin A and carotenoids via HPLC methods as well as their content of dietary minerals (iron, zinc, etc.) analysed by mass spectrometry, to evaluate if edible insects can also be a viable source of micronutrients. To ensure that insect and insect products are safe for human consumption, levels of heavy metal contaminants will be also analysed by mass spectrometry.

Keywords: Food analysis, food security, insects, nutrition security

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