

Insects as food – a pilot study for industrial production

Wendin K^{1,2*}, Olsson V¹, Forsberg S¹, Gerberich G¹, Birch K¹, Berg J³, Langton M⁴, Davidsson F⁵, Stüffe S⁵, Andersson P⁷, Rask S⁷, Cedergaardh F⁸, Jönsson I¹.

1. Kristianstad University, Sweden
2. University of Copenhagen, Denmark
3. RISE Research Institutes of Sweden
4. Swedish Agricultural University
5. Geoloc AB
6. ATRIA Scandinavia
7. Solina Group
8. Tetra Pac, Sweden

*Corresponding author: Karin Wendin, karin.wendin@hkr.se

Despite the many papers reporting on disgust factors of eating insects in Western cultures, the interest of insects as food is increasing, not least because they are nutritious, sustainable and tasty! The time has come to take the next step by making insects available not only as delicious restaurant food, but also for industrial production of foods and meals based on insects. The sensory attributes are of greatest importance to increase understanding of insects as a main ingredient in production and shelf life.

By the use of factorial designs with mealworms as main ingredient, the aim was to evaluate the sensory impact of additions such as salt, oil/water and antioxidant agent. Also the impact of particle size of the mealworms was evaluated.

Cooked fresh mealworms cut or ground into different particle sizes, oil, water, salt and rosemary were blended according to a factorial design. The resulting products were evaluated by descriptive sensory analysis in addition to instrumental measurements of viscosity and colour. Nutritional contents were calculated.

Results showed that particle size of the mealworms had a great impact, ie an increased particle size increased the yellowness and the perceived coarseness. Further, both viscosity and crispiness increased. An increased particle size also meant a decreased odour, probably due to decreased exposure of particle surface. Increased salt content did, as expected, increase saltiness. It also increased the nutty flavour, probably due to the polarity of Sodium Chloride. Different ratios of oil/water did not seem to impact the sensory properties. With reference to the anti-oxidative effects of carnosic acid and carnosol, addition of rosemary had a significant impact on shelf life in terms of decreased rancidity and colour changes. All samples were high in protein content.

All factors, but especially particle size of the mealworm fraction, influenced the sensory attributes.

Published in: Book of Abstracts of the EAAP 70th Annual Meeting of the European Federation of Animal Science, Book of abstracts No 25, ISBN: 978-90-8686-339-6, ISSN 1382-6077, **2019**