Edible insects on the Belgian market
Claeys W., Verraes C., Ngonlong Ekende E., Van Huffel X. & Lefèvre V.

Federal Agency for the Safety of the Food Chain (FASFC), DG Control Policy, Kruisduinlaan 55, B-1000 Brussels, Belgium

Introduction

Insects intended for human consumption or ‘edible’ insects, also referred to as ‘micro livestock’ or ‘mini livestock’, could offer great potential in the search for alternative dietary protein sources. Presently, there is however legal uncertainty as to whether whole insects or preparations thereof (e.g. worm paste) fall within or outside of the scope of the Novel Food Regulation (EC) N° 258/97 [1]. According to this Regulation, foods or food ingredients which have not been used for human consumption to a significant degree within the European Union before 15 May 1997 are novel foods or novel food ingredients and must receive an authorization of the European Commission before they may be placed on the Community market.

Risk assessment

Edible insects are quite nutritious, but like vertebrates, may contain pathogens (fungi, bacteria, parasites, etc.) and toxic substances which can be hazardous to health when consumed. An assessment of the potential microbial, chemical (including allergens) and physical hazards specifically related to the consumption of insects (entomophagy) performed by the Scientific Committee (SciCom) of the Belgian FASFC and the Superior Health Council (SHC) [2], shows that the potential risks may be largely controlled by the correct application of good hygiene and manufacturing practices during the breeding and marketing of insects. Nevertheless, a heating step before consumption is strongly recommended as well as appropriate storage and preparation conditions. Persons who are allergic to shellfish and/or dust mites are warned for a possible allergic reaction to eating insects.

Similar conclusions were drawn in the risk assessments performed by the Netherlands Food and Consumer Product Safety Authority (NVWA) [3] and the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) [4]. Currently, a working group within the Scientific Committee and Emerging Risks Unit of the European Food Safety Authority (EFSA) is elaborating an opinion on the safety risks from insects as food and feed (question number EFSA-Q-2014-00578).

Insects currently tolerated on the Belgian market

<table>
<thead>
<tr>
<th>Latin name</th>
<th>English name</th>
<th>Stage of development at the time of consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acheta domesticus</td>
<td>House cricket</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Acheta gracilis</td>
<td>lesser wax moth</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Acheta apricata</td>
<td>wax moth</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Gryllodes sigillatus</td>
<td>waxworm</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Lethinus monilis</td>
<td>waxworm</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Galleria mellonella</td>
<td>greater wax moth</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Gryllodes sigillatus</td>
<td>banded cricket</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Gryllus assimilis</td>
<td>field cricket</td>
<td>adult (image)</td>
</tr>
<tr>
<td>Locusta migratoris</td>
<td>African migratory locust</td>
<td>larva &amp; adult (nymph &amp; imago)</td>
</tr>
<tr>
<td>Schistocerca americana</td>
<td>American desert locust</td>
<td>adult</td>
</tr>
<tr>
<td>Tenodera molitor</td>
<td>yellow meal beetle</td>
<td>arva</td>
</tr>
<tr>
<td>Zophobas alatus</td>
<td>Tenebrio molitor</td>
<td>larva</td>
</tr>
</tbody>
</table>

* Next to lesser mealworm, the larvae of the titer beetle is often (wrongly) referred to as buffalo worm

Belgian policy

Pending a clear European legislation, the Belgian FASFC currently tolerates 10 insect species on the Belgian market [5]. This tolerance does not apply to ingredients that were isolated or extracted from insects, such as protein isolates. Operators who wish to market insect species other than the 10 tolerated ones, need to follow the novel foods procedure.

Main requirements for the marketing of insects:

• Operators breeding, producing or marketing edible insects or insect-based foods have to be registered at the FASFC and/or require a FASFC authorization.
• The performed activities must comply to the general rules of the food legislation, amongst which the application of good hygiene practices, traceability, compulsory notification, labeling and establishment of a self-checking system based on the HACCP principles. The breeding of insects is subject to the rules applicable for primary production, including the feed legislation.
• As there are no specific regulations for the production and commercialization of insects intended for human consumption, the microbiological criteria for ‘comparable’ food products mentioned in Regulation (EC) N° 2073/2005 [6] could be considered as possible food safety and process hygiene guideline values.

Specific recommendations to be taken into account:

• cleaning & disinfection of the nursery area, livestock and equipment (at least after each culture cycle);
• regular removal of faeces and individual deaths (to the extent possible and with the exception of the waxworms Galleria mellonella);
• regular replacement of feed and water (unless manipulation of the feeding bed is not appropriate for the development of the insects);
• a strict separation between the production of insects intended for food and of insects intended for animal feed (pets);
• when pharmacological substances (e.g., veterinary medicines) are administered, Regulations (EU) no. 37/2010 [7] and (EC) no. 470/2009 [8] should be respected;
• heating (blanching, cooking, oven drying) before marketing the product (note: as spore-forming bacteria pose a potential risk, a heat treatment such as sterilization is strongly advised);
• periodical testing for the presence of possible pathogenic bacteria;
• suitable storage conditions.

More clarification on the currently prevailing regulations and national requirements concerning the breeding, the marketing and the import of insects and insect-based foods is given in a circular published on the FASFC’s website [5].

References