\*\*Mealworms and health issues\*\*

**Nutritional values**

Mealworms larvae are highly comparable to beef in terms of content (FAO, 2013) for a lesser environmental impact. Complete content studies of fresh mealworms have been carried out (Finke, 2002).

\*Melinda, please insert here the nice graph you made for the PPT presentation!\*

The table below presents more detailed results of the important results of these studies. We put the daily nutritional recommended values for comparison:

Table 1: Nutritional content of mealworms compared to beef

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Tenebrio molitor (larvae) | Tenebrio molitor (adult) | Beef | Daily recommended value | |
| **General data** |  |  |  |  |  |
| Protein (g/100g) | 18,7 | 23,7 | 28,9 | 50 | g |
| Fat (g/100g) | 13,4 | 5,40 | 19,2 | 65 | g |
| Metabolizable Energy (kcal/100g) | 206 | 138 | 297 | 1600 to 2800 | kcal |
| **Minerals** |  |  |  |  |  |
| Calcium (mg/100g) | 16,9 | 23,1 | 15,9 | 1000 | g |
| Magnesium (mg/100g) | 80,1 | 60,6 | 18,8 | 400 | g |
| Sodium (mg/100g) | 53,7 | 63,2 | 47,1 | 24 | g |
| Iron (mg/100g) | 2,06 | 2,18 | 2,42 | 18 | g |
| Zinc (mg/100g) | 5,20 | 4,62 | 6,66 | 15 | g |
| **Vitamins** |  |  |  |  |  |
| Vitamin B1 (Thiamin, mg/100g) | 0,24 | 0,10 | 0,06 | 1,5 | mg |
| Vitamin B2 (Rhiboflavin, mg/100g) | 0,81 | 0,85 | 0,17 | 1,7 | mg |
| Vitamin B12 (μg/100g) | 0,47 | 0,56 | 2,13 | 6 | μg |
| Vitamin C (mg/100g) | 1,20 | 5,40 | 0,06 | 60 | mg |
| **Sources:** |  |  |  |  |  |
| FAO 2012, [Adapted from Finke, 2002, and USDA, 2012 by D. Oonincx] | | |  |  |  |
| <http://www.wolframalpha.com/input/?i=daily+recommended+calories#subpod_0200_1_zoom> | | | |  |  |
| <http://en.wikipedia.org/wiki/Reference_Daily_Intake> | |  |  |  |  |
| <http://www.health-alternatives.com/meat-protein-nutrition-chart.html> | | |  |  |  |

As a conclusion, the consumption of mealworms represents a good alternative to beef meat.

**Microbial safety**

At the moment, it has been proven that a heating step is sufficient to get rid of Enterobacteriaceae and other. However, the presence of spore-forming bacteria remains a potential risk that cannot be completely solved by boiling. Further research has to be carried out including refrigerating, drying and acidifying (H.C. Klunder, 2012)

**Allergy**

According to some studies, people frequently in contact with mealworms larvae risk to develop allergic reactions such as the inflammation of the eyes and nose (FAO, 2013)