

Review of food composition data on edible insects



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Outline



- Background
- Food composition data on edible insects
- Conclusion
- Future steps

Background



- A new source of protein is required to feed the world's population → one possibility to promote edible insects
 - More than 1700 edible insect species are known
 - Edible insects are part of common diet in Africa, Asia and Latin America → important cheap source of high-protein food in rural areas
- Consumption of edible insects is common but little info about their nutritional value

Generalizations



General claims found in the literature:

- High protein content: rich in essential AA (equivalent to meat)
- Fiber content equivalent to cereals
- Rich in fat (essential fatty acids) leading to a high energy value
- Rich in minerals (such as iron, magnesium, potassium)
- → There are some articles in the scientific literature and some FCT include data on edible insects: e.g. ASEAN FCT, FCT for West Africa

Available data in the international literature



- From articles covering edible insects **worldwide**
- Focused on articles per **100 g edible portion** on **fresh weight** basis
- Only **34%** (23/67) from the articles could be entered in the FAO/INFOODS FCDB for Biodiversity. Other articles were based on dry matter, old/not available, lack of info about the data or data inconsistency, the insects were part of a recipe,...
- → **212 food data entries, mostly on raw and 10 on dried**

Food groups
01 Cereals and cereal products
02 Starchy roots and tubers
03 Legumes and their products
04 Vegetables and their products
05 Fruits and their products
06 Nuts and their products
07 Meat and poultry and their products
0701 Insects
08 Eggs and their products
09 Fish and their products
10 Milk and their products
11 Fat and oils
12 Beverages
13 Miscellaneous

Food composition data on some insects per 100 g edible portion



Food name Insect	Protein (g)	Fat (g)	Ash (g)	Calcium (mg)	Iron (mg)	Magnesium (mg)	Potassium (mg)
Silkworm, pupa, raw	15.80	8.0	1.1	24	7.00	54	NA
Cricket, raw	25.10	4.6	1.6	34	21.00	NA	NA
Mealworm, adult, yellow, raw	16.88	10.1	1.2	43	1.40	92	NA
Fruit fly, adult, raw	15.63	5.2	1.2	45	9.50	48	NA
Silk moth, larva, raw	15.33	4.9	NA	50	NA	57	NA
Grasshopper, male, raw	29.25	NA	NA	47	7.98	43	320
Bee, raw	40.81	NA	NA	31	11.00	43	298
Ground beetle, raw	37.31	NA	NA	25	22.82	32	247
June beetle, raw	26.94	NA	NA	14	5.50	62	377

Remarks

- Ranges

		Protein (g)	Fat (g)	Ash (g)	Calcium (mg)	Iron (mg)	Magnesium (mg)	Potassium (mg)
Raw	Average	28.89	7.65	2.88	57	9.03	58	322
	Standard deviation	10.78	6.88	3.72	92	14.05	31	89
	Minimum	4.57	0.38	0.60	10	0.04	6	27
	Maximum	49.36	25.72	20.16	986	140.38	198	782
Dried	Average	38.15	23.84	4.81	109	50.69	90	554
	Standard deviation	11.19	14.18	3.27	62	36.37	41	357
	Minimum	25.94	8.50	1.60	37	9.34	47	262
	Maximum	56.06	48.00	11.50	207	102.90	168	1074

Conclusion



- Edible insects are nutritious: high source of proteins, source of minerals (such as magnesium and iron)
- Little information on food consumption and food composition of edible insects
- There are significant differences in nutritional values among edible insects due to **feed, location, season, age/life stage, gender...**
- The existing consumption/market surveys show that edible insects play an important role for income and/or source of protein in various countries/regions
- Some published FCDB already include data on edible insects

Future steps



- Generate more analytical data of edible insects and their varieties in composition studies
- Use this data in advise to producers and policy makers
 - increase production and consumption
 - new market possibilities for developing countries
 - good communication needed to increase consumption
- In the end of March the FAO/INFOODS FCDB for Biodiversity including edible insects will be available at INFOODS website:
http://www.fao.org/infoods/index_en.stm
- Analytical data can be sent to us to get more data and to complete the database

Thank you for your attention!

