

Table S1

Survey: Consumption of insect-based foods in Switzerland

Survey of the University of Applied Sciences of Western Switzerland (Haute école spécialisée de Suisse occidentale – HES-SO), Master's in health sciences, Nutrition and Dietetics.

This questionnaire addresses students at Swiss universities and higher education institutions.

First of all, we would like to thank you for your participation in this questionnaire which will allow us to better understand the needs and potential interests of consumers for new food concepts.

Please consider the following points:

- Filling out the online questionnaire takes about 18 minutes.
- Your answers will be treated as strictly confidential and anonymous.
- Statistical interpretations will not allow any inferences to be made about individual persons.
- The data collected will be used for scientific research and teaching.
- It is possible that some questions may seem very similar to you. This is a deliberate choice to increase the accuracy of the responses obtained.
- To ensure representativeness, it is very important that as many opinions as possible are expressed. Even if you don't think you have "much" to say on the subject, your answers count!

Thank you very much for your participation in this survey!

Aline Penedo - Student, Master's in Health sciences, Nutrition and Dietetics, HES-SO

Under the supervision of :

Dr. Wolfram Manuel Brück, Professor HES, University of Applied Sciences Valais

Dr. Sophie Bucher Della Torre, Professor HES, University of Applied Sciences Geneva

Dr. Corinne Kehl, Professor, University of Applied Sciences Geneva

Insects as an alternative source of protein

You may have noticed. Recently, there has been a growing media focus on insects as a food, or more specifically as a protein source in the human diet.

According to the Federal Office of Food Safety and Veterinary Affairs (FOSV), "As of May 1, 2017, it is permitted to produce three species of insects for food purposes and to market them as a food or food ingredient. These are new kinds of foodstuffs". The species are mealworms in the larval stage, crickets and locusts. To date, products such as salty snacks, protein bars and burgers that look and taste like meat and are made from insects can be found on the Swiss market. These foodstuffs have to be labelled according to the legislation.

With this survey, we want to study the opinion of young adults on this subject with the aim of understanding aspects related to health, sustainable food and trade. It is not necessary to have ever eaten insects to participate in the survey. Even without experience, you certainly have an opinion on the subject and it is this opinion that interests us.

Below are some of the arguments in favor of eating insect-based foods. Please check the arguments that seem most relevant to you, and that may or may not convince you to eat insects.

Q.1 - First argument: sustainability

The United Nations Food and Agriculture Organization (FAO) recommends insect consumption for sustainability. To provide an equivalent amount of protein, insects require much less feed and take up less space than for example pigs or cattle. In addition, they produce extremely little greenhouse gases. By replacing meat with insect proteins I, as a consumer, can contribute to sustainable development.

	Strongly Disagree				Strongly Agree	
	1	2	3	4	5	6
This argument is relevant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The "sustainability" argument could make me regularly eat protein made from insects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q.2 – Second argument: health

Increasingly more studies show that excessive consumption of red meat is harmful for the health.

Intensive livestock production involves the use of antibiotics which can remain in the meat and also pose health risks. The proteins made from insects, however, are high quality with a significantly lower

fat content compared to that of pork or beef proteins. By replacing meat with insect proteins, I, as a consumer, can eat healthier.

[illegible]

Q.3 – Third Argument: Price

In view of the growing world population, the demand for meat (chicken, pork, beef) will increase and prices will soar. The production of proteins from insects, however, is extremely cheap, so that these products can be sold cheaper than meat. By replacing meat with insect proteins, I, as a consumer, can make significant cost savings.

[illegible]

Q.4 – Fourth Argument: Taste

Insects are both tender and crisp in the mouth and have a nutty taste with notes of caviar, corn or avocado. By supplementing my diet with proteins made from insects, I, as a consumer, can make new gustatory experiences.

[illegible]

Q.5 – Fifth Argument: Trend

Edible insects are also called "meat of the future". In fact, big supermarket chains in Switzerland and Europe have already offered products based on insect proteins and the sales have exceeded retailer expectations. It is therefore very possible that in the next five or ten years, a large majority of the Swiss population will have insects on their menu.

[illegible]

Q.6 – Presentation

Food made from insects can be presented in many different forms. What is the probability that the following products could be regularly on your menu?

[illegible]

	Very Unlikely				Very Likely	
	1	2	3	4	5	6
Spice mix and powdered insects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insect flour for making bread / dough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Charcuterie insects (like sausage from Lyon)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muesli with insects (insects are recognizable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cereal bar with chocolate covered insects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ravioli with insects (insects unrecognizable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy drink with insect proteins (liquid)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tofu with insects (looks like Tofu)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweet mousse with insects (insects unrecognizable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q.7 – Questions about insect consumption

Q.7.1 – Have you already eaten insects (e.g., during vacation)?

- No, never. ☐
- Yes, one time. ☐
- Yes, multiple times. ☐

Q.7.2 – If yes, what was your main reason to have eaten insects? If no, what would be the best reason for you to eat insects?

- By curiosity ☐
- To do something crazy ☐
- To impress others ☐
- Because it tastes good ☐

- | | |
|---|--------------------------|
| Because the value is good | <input type="checkbox"/> |
| Because others have also eaten | <input type="checkbox"/> |
| To replace meat | <input type="checkbox"/> |
| Because eating insects is sustainable | <input type="checkbox"/> |
| Because their proteins are high quality | <input type="checkbox"/> |
| Other reasons | <input type="checkbox"/> |
-

Q.7.3 – Why have you never eaten insects, or why haven't you eaten insects more often?

- | | |
|---|--------------------------|
| It disgusts me | <input type="checkbox"/> |
| Fear of illness | <input type="checkbox"/> |
| I don't like to eat what I don't know | <input type="checkbox"/> |
| I have not had a chance / I cannot find | <input type="checkbox"/> |
| I do not find it good | <input type="checkbox"/> |
| One try is enough | <input type="checkbox"/> |
| Too expensive | <input type="checkbox"/> |
| I prefer real meat | <input type="checkbox"/> |
| Other reasons | <input type="checkbox"/> |

Q.8 – Questions on meat consumption (e.g., chicken, pork, beef)

How often do you eat meat?

- | | |
|------------------------|--------------------------|
| I do not eat meat | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| 1-3x per month | <input type="checkbox"/> |
| 1-2x per week | <input type="checkbox"/> |
| 3-4x per week | <input type="checkbox"/> |
| 5-6x per week | <input type="checkbox"/> |
| Everyday | <input type="checkbox"/> |

Q.9 – Please, indicate how much you agree with the following statements

[illegible]

[illegible]

[illegible]

Strongly Disagree

Strongly

Agree

1

2

3

4

5

6

I look in the newspaper for special offers and make use of them when I go shopping.

☐☐☐☐☐☐

Q.10 – Final Questions

Q.10.1 – Are you...?

Male

☐

Female

☐

Others

☐

Q.10.2 – How old are you?

18-24

☐

25-30

☐

31-36

☐

>36

☐

Q.10.3 – In which linguistic region do you live in?

Swiss German

☐

Swiss Romand

☐

Swiss Italian

☐

Q.10.4 – Which was the last school you attended or are you attending now?

Just consider your highest level of education.

Bachelor's degree

☐

Master's degree

☐

PhD

☐

Others

☐

Q.10.5 – What is your main field of study?

- | | |
|--|--------------------------|
| Economy, commerce, management and services | <input type="checkbox"/> |
| Engineering, architecture | <input type="checkbox"/> |
| Natural sciences, computer sciences, life sciences | <input type="checkbox"/> |
| Humanities and Social Sciences | <input type="checkbox"/> |
| Law degree | <input type="checkbox"/> |
| Health Sciences | <input type="checkbox"/> |
| Music, Arts, Design | <input type="checkbox"/> |
| Pedagogy, educational sciences | <input type="checkbox"/> |
| Others | <input type="checkbox"/> |

Q.10.6 – What is your nationality (in the case of double nationalities, multiple responses are possible)?

- | | |
|-----------------------------------|--------------------------|
| Suisse | <input type="checkbox"/> |
| France | <input type="checkbox"/> |
| Other nationality, please specify | |

A big thank you for your participation in this questionnaire!

If you would like to leave us a comment on this topic or on the survey, please send an e-mail to:
aline.oliveira@hes-so.ch