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Perception and acceptance of insect-based products by GenZ and Millennials using a sensory tasting and quantitative questionnaire

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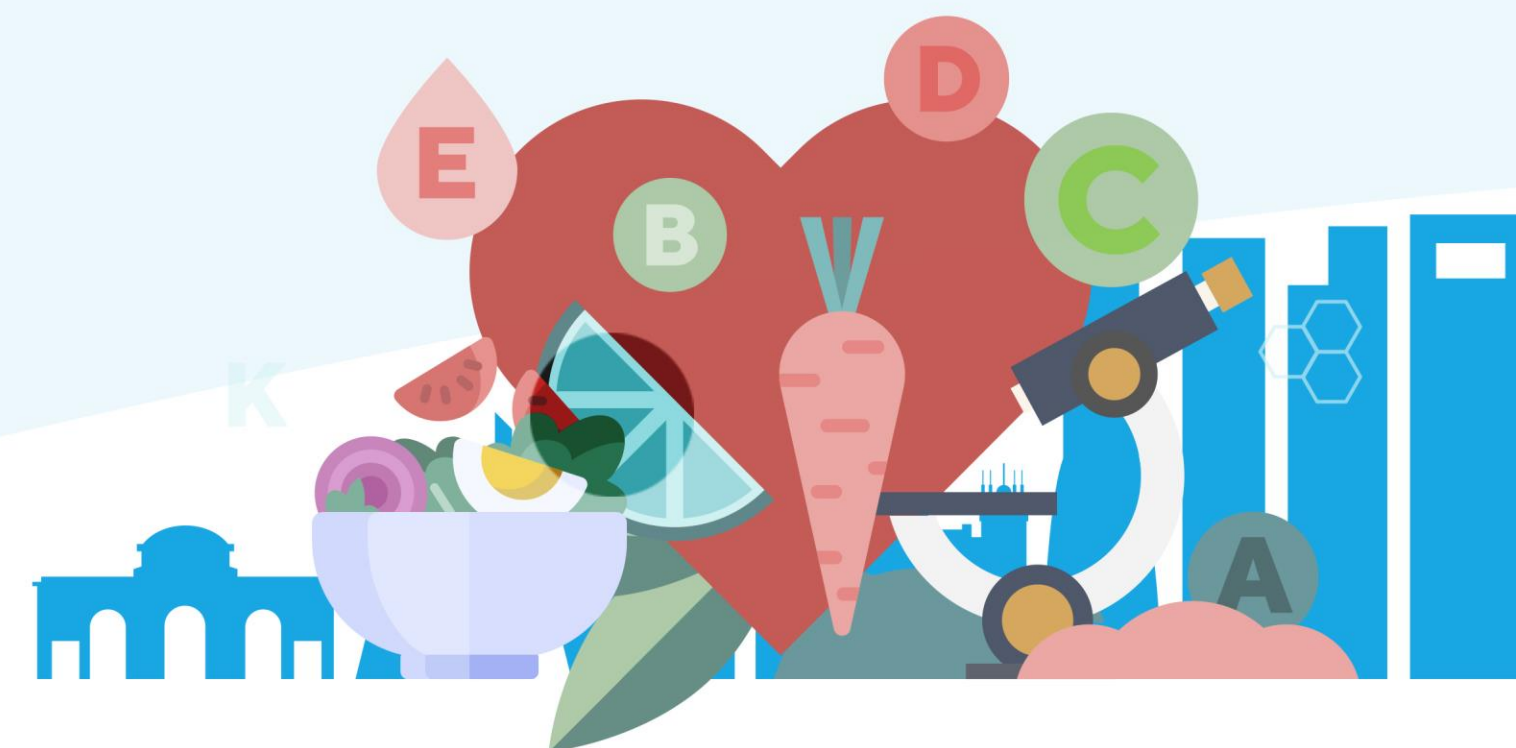
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“Perception and acceptance of insect-based products by GenZ and Millennials”

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Introduction

Entomophagy (consumption of insects) represents a sustainable and nutritious alternative to conventional meat. Insects are rich in protein (up to 75%), essential fats (up to 77%) and minerals (up to 8%). They require fewer resources and cause fewer greenhouse gas emissions. Insects are a valuable option to improve food security and reduce our environmental footprint, especially considering increasing consumer demand for greener and healthier diets. In the EU, 6 insect species are approved: migratory locust, lesser mealworm, yellow mealworm, house cricket, German cheese mite and flour mite.

Key Findings

- Clear discrepancy between awareness and consumer behaviour.
- Products are more appealing when insects are not visible.
- Neophobia remains key barrier.
- Familiarity increased the acceptance.
- Insect-free variants were mostly preferred (except for granola and puffs).



Methods

- **Close-ended Questionnaire:** 118 participants to assess awareness, attitudes and willingness to consume insect-based products.
- **Sensory Evaluation:** 59 participants rated the appearance, aroma, taste, sweetness and mouthfeel of 5 insect-based vs. 5 traditional products using a hedonic scale.
- Followed ISO 8586:2012 and ISO 8586:2014 standards.
- Participants aged 18-30 and predominantly from Europe.

Hedonic scale
1 = Like a lot
2 = Like a little
3 = Neither like nor dislike
4 = Dislike a little
5 = Dislike a lot

Analysis

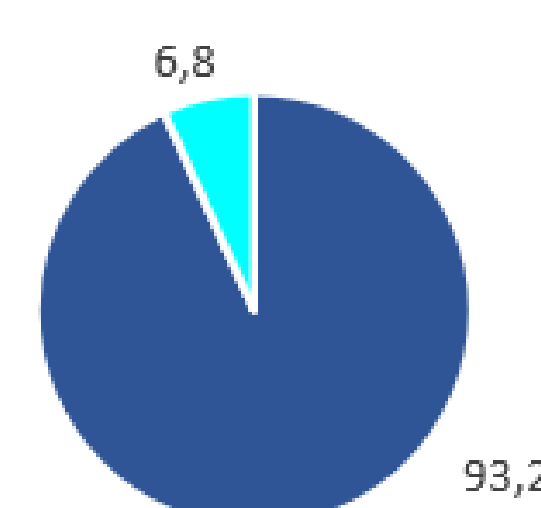
- **Pearson correlation analysis** assessed relationships between food neophobia, willingness to try and perceptions of insect-based products.
- Sensory attributes were statistically analysed using **ANOVA** to determine significant differences between traditional and insect-based products.
- **IBM SPSS software** was used.

Results

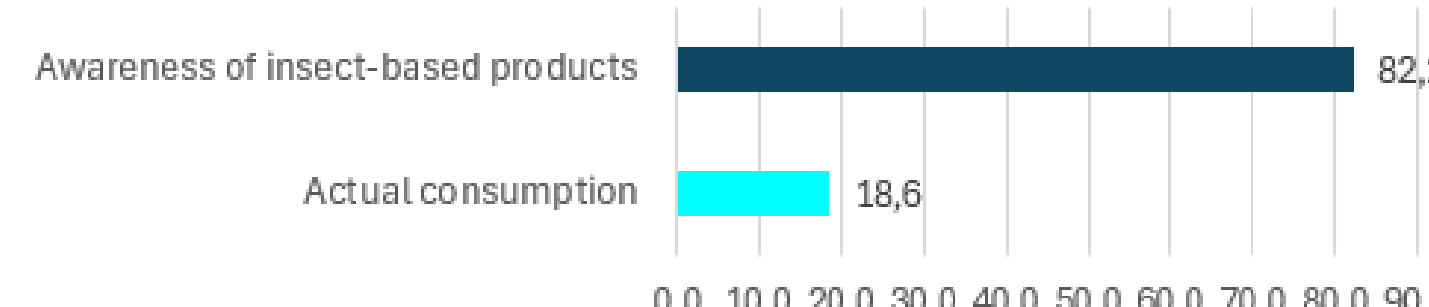
Questionnaire:

- 82.2% of participants are aware of insect-based products.
- 86% recognise insects as nutritious (particularly rich in protein).
- 58% see consumption as environmentally friendly.
- Only 18.6% have tried insects.
- 93.2% find products more appealing if the natural appearance of the insects is hidden.
- People with higher neophobia scores are less willing to consume insect products ($r = -0.208$) while previous consumption is positively correlated with future willingness to consume ($r = 0.312$).

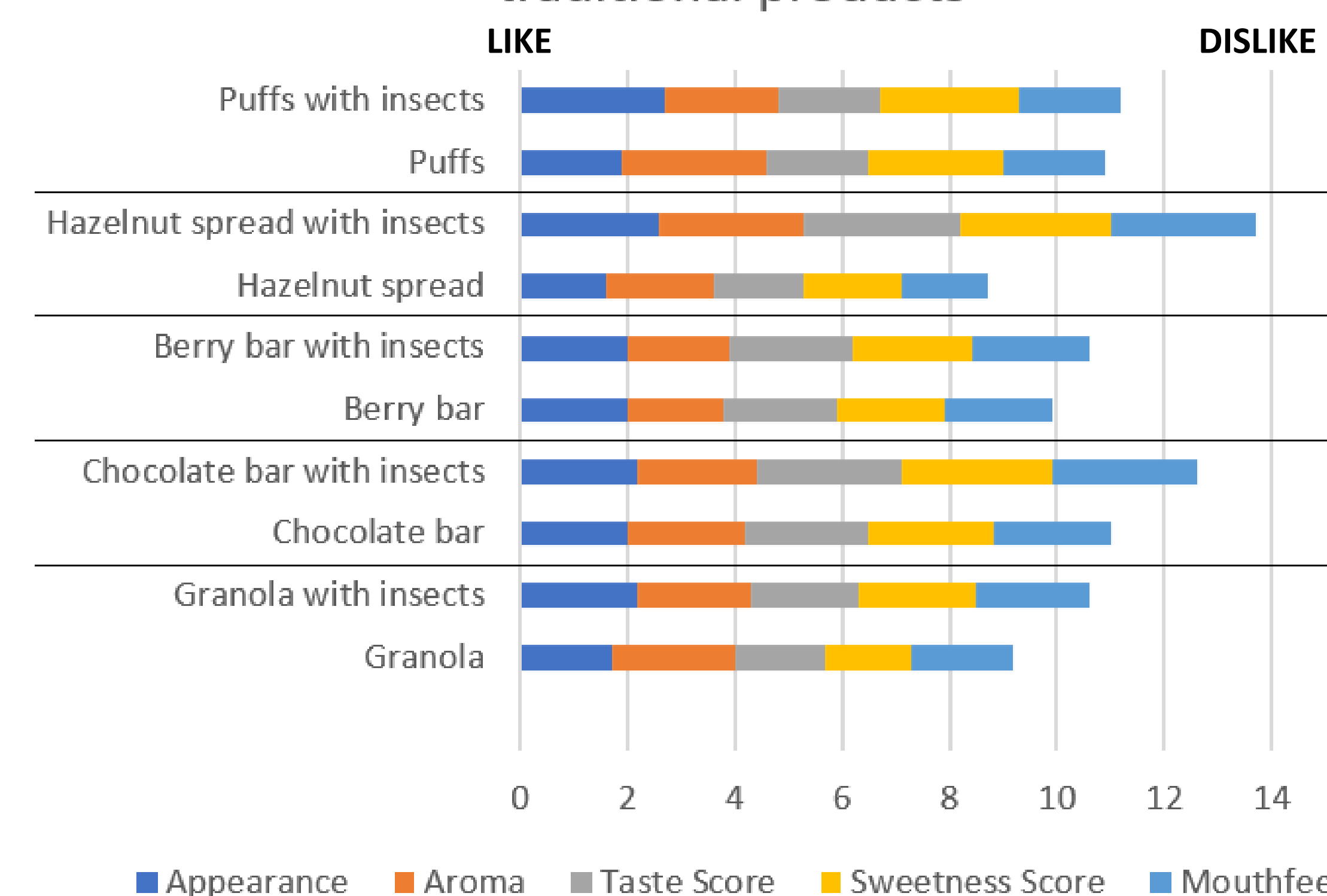
Preference for the preparation of insect-based products (%)



Awareness vs. consumption (%)



Sensory Evaluation: Insect-based vs. traditional products



Sensory Evaluation:

- While the appearance of insect-based products such as granola and puffs were rated favourably, traditional alternatives performed better overall in other categories such as taste and texture.
- For hazelnut spreads, the insect-free product was significantly favoured, especially in the mouthfeel category (1.6 ± 0.1 compared to 2.6 ± 0.1 for the insect variant).
- Familiarity plays a central role in acceptance, as familiar flavours and texture profiles were generally preferred by the participants.

Conclusion

The study highlights the **gap** between awareness and actual consumption of insect-based products. While many recognise the **nutritional and environmental benefits**, significant barriers such as **neophobia and unfamiliarity** limit widespread acceptance. Sensory evaluation shows that formulation improvements, including **hiding the visual presence** of insect parts, can increase attractiveness. In addition, **exposure and early consumption experience** play a critical role in increasing acceptance. Future efforts should focus on familiarising consumers with insect proteins through targeted education, culinary innovation and the integration of insects into commonly consumed foods. Gastronomic and political support is crucial for normalisation and greater market uptake.

Reference

Willeke, M.; Tsiami, A.; Lara, S.W. (2025). *Tasting the Future: Sensory Evaluation and Perception of Insect-Based Products Among GenZ and Millennials*. *Gastronomy*, 3(2). <https://doi.org/10.3390/gastronomy3010002>