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THE ABILITY OF LEGUMES TO IMPROVE THE MOUTHFEEL OF HIGH-INTENSITY SWEETENERS

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ABSTRAK

BRAYEN ARIEL. Kemampuan Legum untuk Meningkatkan *Mouthfeel* Pemanis Berintensitas Tinggi. Dibimbing oleh **CHRISTOFORA HANNY WIJAYA.**

Pemanis berintensitas tinggi (PBT) memiliki kendala terkait penerimaan sensorinya, terutama sensasi *mouthfeel* yang berbeda dengan sukrosa. Penelitian ini bertujuan untuk mempelajari kemampuan legum meningkatkan *mouthfeel* PBT. Sepuluh legum terdiri dari mede, *hazelnut*, kacang tanah, *almond*, kenari, koro, kedelai, kacang merah, kacang hijau, edamame dan enam PBT terdiri dari aspartam, sukralosa, asesulfam-K, stevia, siklamat, sakarin dievaluasi dalam penelitian ini. Evaluasi diawali dengan pemilihan legum dan PBT yang berpotensi diteliti lebih lanjut dengan pendekatan evaluasi sensori oleh panelis ahli. Kombinasi tiga legum (mede, kacang merah, dan edamame) dan tiga PBT (aspartam, siklamat, dan sakarin) terpilih untuk dievaluasi lebih lanjut dengan menggunakan evaluasi sensori metode *quantitative descriptive analysis* (QDA). Atribut QDA yang diperoleh dari FGD adalah *viscosity*, *softness*, *creaminess*, *fullness*, *watery*, *slimy*, *sticky*, *oily*, dan *slippery*. Edamame menunjukkan nilai tertinggi pada intensitas atribut yang diharapkan seperti *viscosity*, *softness*, *creaminess*, dan *fullness* dengan intensitas yang rendah pada atribut yang dihindari yaitu *watery* dan *oily*. Mede memiliki intensitas sedang pada atribut yang diharapkan namun intensitas tinggi pada atribut yang dihindari. Kacang merah memiliki intensitas rendah pada atribut yang diharapkan selain intensitas tinggi pada atribut *watery* walau intensitas rendah pada atribut *oily*. Siklamat memberikan respon paling positif dengan semua legum dibandingkan PBT lainnya. Kemampuan meningkatkan *mouthfeel* diduga dipengaruhi oleh kadar protein serta lemak dari legum. Semakin tinggi kadar protein legum, semakin tinggi intensitas atribut *viscosity* dan *creaminess* sedangkan semakin tinggi kadar lemak legum, semakin tinggi intensitas atribut *oily* dan *sticky*. Penambahan legum seperti mede, kacang merah, edamame dalam PBT dapat meningkatkan kualitas *mouthfeel*. Penambahan edamame pada siklamat menunjukkan peningkatan kualitas *mouthfeel* yang paling signifikan.

Kata kunci: Pemanis berintensitas tinggi (PBT), legum, *mouthfeel*, *quantitative descriptive analysis* (QDA)

ABSTRACT

BRAYEN ARIEL. The ability of Legumes to Improve the Mouthfeel of High-Intensity Sweeteners. Supervised by **CHRISTOFORA HANNY WIJAYA.**

High-intensity sweeteners (HIS) have problems with their sensory reception, especially the mouthfeel sensation that differs from sucrose. This study aims to study the ability of legumes to increase HIS mouthfeel. Ten legumes consisting of cashews, hazelnuts, peanuts, almonds, walnuts, koro, soybeans, kidney beans, mung beans, edamame, and six HISs consisting of aspartame, sucralose, acesulfame-K, stevia, cyclamate, saccharin were evaluated in this study. The evaluation began with the selection of legumes and HISs that have the potential to be further researched with a sensory evaluation approach by expert panellists. A combination of three legumes (cashews, red beans, and edamame) and three HISs (aspartame, cyclamate, and saccharin) was selected for further evaluation using the sensory evaluation method of quantitative descriptive analysis (QDA). The QDA attributes obtained from FGD were viscosity, softness, creaminess, fullness, watery, slimy, sticky, oily, and slippery. Edamame showed the highest scores on the intensity of the expected attributes such as viscosity, softness, creaminess, and fullness with low intensity on the avoided attributes, namely watery and oily. Cashew has a moderate intensity on the expected attributes but a high intensity on the avoided attributes. Red beans have a low intensity in the expected attributes and high intensity in the watery attribute although low intensity in the oily attribute. Cyclamate gave the most positive response with all legumes compared to other HISs. The ability to improve mouthfeel is thought to be influenced by the protein and fat levels of legumes. The higher the legumes' protein content, the higher the intensity of the viscosity and creaminess attributes while the higher the content of legumes' fat, the higher the intensity of the oily and sticky attributes. The addition of legumes such as cashews, kidney beans, and edamame in HIS can improve the quality of mouthfeel. The addition of edamame to cyclamate showed the most significant improvement in mouthfeel quality.

Keywords: High-intensity sweeteners (HIS), legume extract, mouthfeel, quantitative descriptive analysis (QDA).



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THE ABILITY OF LEGUMES TO IMPROVE THE MOUTHFEEL OF HIGH-INTENSITY SWEETENERS

BRAYEN ARIEL

Undergraduate Thesis
submitted as one of the requirements for obtaining
Bachelor's degree in Food Technology in the
Study Program of Food Technology

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The author realizes that this proposal is far from perfection, so constructive criticism and suggestions are expected from readers. The author hopes that this research proposal is useful for those in need and contributes to the advancement of science.

Bogor, January 2025

Brayen Ariel

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GLOSSARY

High-Intensity
Sweeteners (HIS)

: Compounds that provide sweetness levels far exceeding sucrose with minimal or no caloric content. Examples include aspartame, sucralose, and saccharin.

Mouthfeel

: The sensory perception of food in the oral cavity, including attributes such as viscosity, creaminess, and texture.

Legumes

: Plants from the family Fabaceae, such as soybeans, mung beans, and kidney beans, known for their nutritional and sensory-enhancing properties.

Kokumi

: Substances, often found in legumes, that enhance the sensory perception of mouthfeel attributes like thickness and flavor continuity.

Quantitative Descriptive
Analysis (QDA)

: A sensory analysis method used to quantitatively measure the intensity of sensory attributes, requiring trained panellists for accurate evaluation.

Principal Component
Analysis (PCA)

: A statistical technique that reduces data dimensionality by transforming correlated variables into a smaller set of uncorrelated components, retaining most of the data's variance.

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