

***REVIEW POTENSI DAN KELAYAKAN BAWANG
HITAM SEBAGAI BAHAN DASAR PENYEDAP RASA***

***A REVIEW ON POTENCY AND DECENCY OF BLACK
GARLIC UTILIZATION AS FLAVOR ENHANCER BASE***



TUGAS AKHIR S1

**OLEH
Ernest Vivaldi Mananta
19.II.0010**

**KONSENTRASI *FOOD TECHNOLOGY AND INNOVATION*
PROGRAM STUDI SARJANA TEKNOLOGI PANGAN
FAKULTAS TEKNOLOGI PERTANIAN
UNIVERSITAS KATOLIK SOEGIJAPRANATA
SEMARANG**

2023

**REVIEW POTENSI DAN KELAYAKAN BAWANG
HITAM SEBAGAI BAHAN DASAR PENYEDAP RASA**

**A REVIEW ON POTENCY AND DECENCY OF
BLACK GARLIC UTILIZATION AS FLAVOR
ENHANCER BASE**

TUGAS AKHIR S1

Diajukan untuk
memenuhi persyaratan yang diperlukan untuk
memperoleh gelar Sarjana Teknologi Pangan

OLEH
Ernest Vivaldi Mananta
19.11.0010

**KONSENTRASI *FOOD TECHNOLOGY AND INNOVATION*
PROGRAM STUDI SARJANA TEKNOLOGI PANGAN
FAKULTAS TEKNOLOGI PERTANIAN
UNIVERSITAS KATOLIK SOEGIJAPRANATA
SEMARANG**

2023

RINGKASAN

Penyedap rasa penting, terutama di Asia, karena bisa memberi sensasi gurih. Rasa umami dapat memperkaya cita rasa masakan sehingga pelaku usaha industri pangan masa kini menganggap penyedap rasa sebagai bahan wajib. Dari sejak ditemukannya rasa umami, monosodium glutamat (MSG) adalah penyedap rasa paling dikenal dunia. Namun pemasaran MSG terkendala reputasi. Metode produksi dan tampilannya memberi kesan produk kimia buatan pabrik dan konsumen berasumsi bahwa konsumsinya berdampak buruk bagi tubuh. Terlepas dari validitas asumsi dan reputasi tersebut, hal ini membuka kesempatan bagi penyedap rasa alternatif agar dapat bersaing dengan meraup lebih banyak kepercayaan konsumen. Tujuan penelitian *systematic review* ini adalah mengetahui prospek, potensi, dan kelayakan bawang hitam untuk dipakai sebagai penyedap rasa. Penelitian dilakukan di Semarang pada Maret hingga Juni 2023 dan dimulai dengan analisa kesenjangan kemudian dilanjut pengumpulan dan penyaringan literatur serta pengolahan data. Didapati kesenjangan informasi terkait pemanfaatan bawang hitam sebagai penyedap rasa. Senyawa penghasil umami adalah glutamat, glutamin, asam aspartat, theanin, arginin, lisin, alanin, dan nukleotida. Bawang putih umum digunakan sebagai penyedap rasa dan pemeramannya menghasilkan bawang hitam. Pemeraman meningkatkan kadar asam amino penghasil umami bawang putih yang sudah tinggi menjadi lebih kaya. Pemeraman dapat menggunakan inkubator klimatik atau *black garlic fermenting chamber*. Pemeraman optimal pada suhu $73\pm 2^{\circ}\text{C}$, 90% *relative humidity*, dan durasi 21-23 hari. Bawang hitam biasa dipasarkan utuh namun dapat juga dijadikan bubuk atau ekstrak. Komponen umami bawang hitam berjumlah 6197,80 mg/100g. Kadar tersebut cukup tinggi karena melampaui sebagian besar pembanding. Hal ini membuat bawang hitam berpotensi berperan sebagai bahan dasar penyedap rasa. Berbagai manfaat kesehatan bawang hitam membuat produknya dapat dicantumkan berbagai klaim kesehatan. Belum ada standar resmi tentang bawang hitam. Pembuatan standar adaptasi mengacu ke SNI bumbu rasa ayam, SNI rempah bubuk, dan SNI MSG. Hasil menunjukkan aroma dan rasa bawang hitam mirip bawang putih dengan intensitas lebih sedikit. Karakter rasanya didominasi paduan manis dan asam dengan kilasan vanilla, aprikot, dan prem. Bawang hitam bersifat anti kapang dan anti mikroba serta punya kemampuan anti oksidan tinggi. Produksi penyedap rasa berbasis bawang hitam mungkin dilakukan dengan berbagai opsi. *Foam mat drying* dan enkapsulasi dapat menjadi pilihan metode pengeringan karena keduanya terbukti bisa mengeringkan bawang hitam hingga kadar airnya sesuai standar. Berdasarkan standar adaptasi, kandungan dan karakteristik bawang hitam diduga layak diolah menjadi penyedap rasa dengan penerimaan konsumen yang baik. Produk dapat dikemas dalam kemasan plastik, kaca, atau *metalized plastic*. Seluruh kendala yang menjadi halangan dalam proses produksi penyedap rasa berbasis bawang hitam memiliki berbagai opsi solusi yang mungkin. Penentuan dari seluruh pilihan alat, bahan, dan metode produksi bergantung kembali pada prinsip, tujuan, kebutuhan, dan modal produsen. Penelitian dan pengujian lebih lanjut terhadap bawang hitam dibutuhkan agar informasi kualitas yang belum lengkap atau belum ada dapat diketahui secara jelas dan spesifik.

SUMMARY

Flavor enhancer is one of the important additives for the food industry, especially in Asia. Flavor enhancer brings out a savory sensation. Umami enriches food sensory aspects. Since the discovery of umami, monosodium glutamate (MSG) is the most known flavor enhancer in the world. However, MSG marketing is constrained by its reputation. The production method and appearance create the impression of a manufactured chemical product and people assume that its consumption is bad for health. Regardless of the validity, this opens up opportunities for alternative flavor enhancers to compete by earning more consumer trust. This systematic review aims to determine the feasibility, potential, and standard compliance of black garlic based flavor enhancer. The research was conducted in Semarang from March 2023 to June 2023 and began with a gap analysis then continued with research literature collection and filtration and data and information processing. Research gap were found regarding the use of black garlic as flavor enhancer so this area was raised as the topic of this study. Umami compounds are glutamate, glutamine, aspartic acid, theanine, arginine, lysine, alanine, and nucleotides. Garlic has long been used as a flavor enhancer and its aging produces black garlic. Aging makes the levels of garlic's umami-producing amino acids to be even richer than what was already high. Aging can utilise industrial-scale climatic incubator or a black garlic specific fermenting chamber. Aging is optimal at $73\pm 2^{\circ}\text{C}$, with 90% relative humidity, and for 21-23 days. Black garlic is generally marketed as whole but can also be processed into powder or extract. Black garlic contains umami-producing component levels of 6197.80 mg/100g. The content of black garlic's umami component is quite high because comparison shows that the content exceeds most of the comparator, including raw garlic itself. The ability to produce a strong umami taste makes black garlic potentially be used as base for flavor enhancer production. Various health benefits makes it even more marketable with various health claims. There is no official standard about black garlic quality. The adopted standards refers to SNI about chicken flavored seasoning, powdered spices, and monosodium L-glutamate. The results show the aroma and taste of black garlic were similar to garlic with much less intensity where the taste profile was dominated by a combination of sweet and sour with hints of vanilla, apricot and plum. Black garlic can inhibit the growth of mold and *Escherichia coli* T. and has high antioxidant activity. The production of black garlic based flavor enhancer is feasible with variations of possibilities. Foam mat drying and encapsulation become the choices of drying method because both are proven to be able to dry black garlic until water content is below maximum standard. The content and characteristics of black garlic presumably can make the produced flavor enhancer quality meet the standard with good consumer acceptance. Products can be packed in plastic, glass, or metalized plastic packaging. All obstacles in the production process have various possible solutions options. The decisions of all choices of tools, materials, and production methods depend on the principles, goals, needs, and capital strength of the producer. Further research and testing on black garlic is needed so that incomplete or missing quality information can be explicitly and specifically identified.