

RISKA PANCA AGUSTIN. NPM 220331100098. Formulasi *Spray-Dried Flavor Enhancer* Berbasis Tempe Semangit dengan Maltodekstrin dan Rempah Aromatik. Dibawah bimbingan **Prof. Ir. Umi Purwandari, M.App.Sc., Ph.D.** dan **Cahyo Indarto, S.TP., M.P., Ph.D.**

ABSTRAK

Konsumsi Monosodium Glutamat (MSG) yang berlebihan dikaitkan dengan berbagai keluhan kesehatan, sehingga mendorong tren *clean label food* dan meningkatnya permintaan *flavor enhancer* alami berbasis bahan lokal seperti tempe semangit yang kaya asam glutamat. Metode *spray drying* dengan penambahan maltodekstrin sebagai *carrier* dan serbuk rempah aromatik (daun serai dan daun jeruk) berpotensi menghasilkan bubuk *flavor enhancer* alami dengan rendemen dan retensi aroma yang lebih baik, namun pengaruh interaksi ketiga faktor tersebut terhadap karakteristik fisikokimia dan sensoris produk belum banyak dikaji. Penelitian ini bertujuan menganalisis pengaruh konsentrasi maltodekstrin serta jenis dan konsentrasi serbuk rempah aromatik terhadap karakteristik fisikokimia (rendemen, kadar air, kelarutan, waktu larut, dan warna) dan sensoris bubuk *flavor enhancer* alami tempe semangit, serta menentukan formulasi terbaik. Penelitian menggunakan Rancangan Acak Lengkap (RAL) faktorial tiga faktor, yaitu konsentrasi maltodekstrin (20%, 25%, 30%), jenis serbuk aromatik (daun serai dan daun jeruk), dan konsentrasi serbuk aromatik (4%, 6%, 8%), dengan dua kali ulangan sehingga diperoleh 36 unit percobaan. Tahapan penelitian meliputi pembuatan serbuk tempe semangit, ekstraksi menggunakan metode infus, pembuatan larutan umpan dengan penambahan maltodekstrin, serta pengeringan menggunakan *spray dryer* pada suhu *inlet* 220°C dan *outlet* 108°C. Parameter fisikokimia (rendemen, kadar air, kelarutan, waktu larut, dan warna) dianalisis menggunakan ANOVA dilanjutkan uji Duncan, sedangkan penentuan formulasi terbaik dilakukan melalui seleksi fisikokimia yang diikuti uji sensoris hedonik oleh 30 panelis semi terlatih. Konsentrasi maltodekstrin berpengaruh nyata terhadap rendemen, kelarutan, dan waktu larut, dengan hasil terbaik pada konsentrasi 30% (rendemen 37,56%, kelarutan 99,96%, waktu larut 2,07 detik), sementara kadar air seluruh formulasi tetap rendah dan seragam (1,01-1,04%), memenuhi SNI 01-4273-1996. Jenis dan konsentrasi serbuk aromatik berpengaruh nyata terhadap kelarutan dan warna produk, dengan daun serai menghasilkan kelarutan tertinggi (99,98%) dan nilai kemerahan (a^*) tertinggi (2,14). Hasil uji sensoris hedonik menunjukkan warna memperoleh skor tertinggi (3,16), diikuti rasa (2,76), dan aroma (2,65), yang berada pada kategori tidak suka hingga agak suka. Formulasi terbaik yang diperoleh adalah maltodekstrin 30% dengan serbuk daun serai 8% (M3S3), yang unggul pada karakteristik fisikokimia dan sensoris di antara ketiga formulasi terpilih, sehingga dapat disimpulkan sebagai formulasi optimal bubuk *flavor enhancer* alami tempe semangit berbasis *spray drying*.

Kata Kunci: *Flavor Enhancer, Maltodekstrin, Spray Drying, Tempe Semangit*

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ABSTRACT

Excessive Monosodium Glutamate (MSG) consumption has been linked to various health complaints, driving the *clean label food* trend and increasing demand for natural flavor enhancers derived from local raw materials such as *tempe semangit* (overripe tempeh), which is rich in glutamic acid. The spray drying method, combined with maltodextrin as a carrier and aromatic spice powders (lemongrass and kaffir lime leaf), has the potential to produce natural flavor enhancer powder with better yield and aroma retention, yet the interaction effects of these three factors on the physicochemical and sensory characteristics of the product remain largely unexplored. This study aimed to analyze the effects of maltodextrin concentration and the type and concentration of aromatic spice powder on the physicochemical characteristics (yield, moisture content, solubility, dissolving time, and color) and sensory attributes of *tempe semangit*-based natural flavor enhancer powder, as well as to determine the best formulation. The study employed a three-factor factorial Completely Randomized Design (CRD), consisting of maltodextrin concentration (20%, 25%, 30%), type of aromatic spice powder (lemongrass and kaffir lime leaf), and aromatic spice powder concentration (4%, 6%, 8%), with two replications, resulting in 36 experimental units. The research stages included the preparation of *tempe semangit* powder, extraction using the infusion method, preparation of the feed solution with maltodextrin addition, and drying using a spray dryer at an inlet temperature of 220°C and an outlet temperature of 108°C. The physicochemical parameters (yield, moisture content, solubility, dissolving time, and color) were analyzed using ANOVA followed by Duncan's test, while the selection of the best formulation was carried out through physicochemical screening followed by a hedonic sensory test involving 30 semi-trained panelists. Maltodextrin concentration significantly affected yield, solubility, and dissolving time, with the best results obtained at 30% concentration (yield 37.56%, solubility 99.96%, dissolving time 2.07 seconds), while the moisture content of all formulations remained low and uniform (1.01–1.04%), meeting the SNI 01-4273-1996 standard. The type and concentration of aromatic spice powder significantly affected solubility and product color, with lemongrass producing the highest solubility (99.98%) and the highest redness value (a^*) (2.14). The hedonic sensory test results showed that color received the highest score (3.16), followed by taste (2.76) and aroma (2.65), which fell into the dislike-to-slightly-like category. The best formulation obtained was 30% maltodextrin with 8% lemongrass powder (M3S3), which excelled in physicochemical and sensory characteristics among the three selected formulations, and can therefore be concluded as the optimal formulation for spray-dried natural flavor enhancer powder from *tempe semangit*.

Keywords: *Flavor Enhancer, Maltodextrin, Spray Drying, Tempe Semangit*