

## **Determination of Physicochemical Properties and Sensory Evaluation on Enoki Mushroom-Based Patty**

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### **Structured Abstract**

**Background:** The increasing environmental and health concerns associated with meat consumption have led to a search for sustainable and nutritious dietary alternatives. Enoki mushrooms (*Flammulina velutipes*) offer a promising solution due to their nutritional benefits and distinctive texture. This study investigates the physicochemical properties and sensory attributes of Enoki mushroom-based patties compared to traditional meat patties. The exploration of plant-based patties aligns with the global shift towards sustainable food systems, addressing the pressing need for alternatives that reduce the ecological footprint and promote public health.

**Methods:** Enoki mushrooms were incorporated into patties with varying formulations, replacing minced meat with mushroom content. The physicochemical properties including moisture, protein, fat, ash, and carbohydrate content were analysed using standard methods. Texture Profile Analysis (TPA) was performed to evaluate textural properties. Sensory evaluation was conducted using a 9-point hedonic scale to assess attributes such as appearance, taste, texture, and overall liking.

**Results:** The findings reveal that Enoki mushroom patties have higher moisture content (68.33%) and carbohydrates (14.63%) compared to beef patties (56.22% moisture and 12.45% carbohydrates). Conversely, beef patties have higher ash content (1.82%) than Enoki patties (1.60%) and higher fat (18.88%) and protein content (10.63%) compared to Enoki patties (8.63% fat and 6.81% protein). Texture analysis showed that patties with higher mushroom content were softer and less cohesive. Sensory evaluation indicated that patties with 60% Enoki mushroom content received the highest overall liking scores. Vitamin profiling showed increased levels of vitamins B1, B3, B5, and B9 with higher mushroom content, while vitamins B6, B7, and B12 decreased. Phenolic compound analysis indicated significant increases in ergothioneine, vanillic acid, and gallic acid, enhancing antioxidant potential.

**Conclusion:** Enoki mushrooms can enhance patties' nutritional profile and sensory attributes, making them a viable low-fat and carbohydrate-rich alternative to traditional meat patties. This study supports the development of sustainable food products that promote healthier dietary choices and environmental sustainability.

**Keywords:** *Flammulina velutipes*, Alternative Patties, Physicochemical Properties, Sustainable Food.

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