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The Effect of *Pleurotus sajor-caju* (PSC) Addition on the Nutritional Composition and Sensory Properties of Poultry-Based Patty

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Abstract — The nutrient composition and sensory properties of poultry-based patties (PBPs) incorporated with various levels of grey oyster mushroom (*Pleurotus sajor-caju*, PSC) were studied. The PBPs were formulated with either 0%, 25% or 50% of fresh ground PSC. Results show poultry patty formulated with 25% PSC had protein content of 17.46% lower than the control patty which had 18.13% but it was not significant. Meanwhile, both cooked poultry patties containing 25% and 50% PSC significantly recorded lower concentration of fat at 10.67% and 7.15%, respectively. On the other hand, poultry patty added with 50% ground PSC shows the highest concentration of total dietary fibre (TDF) of 4.90 g/100g compared to poultry patty containing 25% of mushroom (3.40 g/100g) and to the control (1.90g/100g). In addition, patty incorporated with 25% PSC had moisture content of 57.91% which is significantly lower than patty formulated with 50% which had moisture of 61.80%. In the sensory evaluation, there were no differences recorded in all sensory attributes of PSC-based patties judged by untrained panelists. In conclusion, the addition of PSC to replace poultry meat can be recommended for the purpose of lowering production cost, enhancing nutritional composition and maintaining the acceptability of poultry patties.

Keywords—oyster mushroom (PSC), poultry patty, nutrient composition, sensory evaluation

I. INTRODUCTION

Historically, mushrooms have been used for both medicinal and culinary properties in Asian and many parts of the world. There are approximately 5000 different species of mushrooms, of which at least 1220 are reported to be edible [1]. There is significant interest in the use of edible mushrooms extracts as dietary supplements based on the facts that they have a lot of bioactive compounds. Pharmaceutically, bioactive mushroom constituents continue to be the main focus of most scientists, including chemical structures, isolation and efficacy experimentations *in vivo* or *in vitro*. The lipid fraction was found to contain a compound with antitumor activity, subsequently identified as ergosterol. Other mushroom constituents may inhibit promotion or progression by exerting direct cytotoxicity, against tumor cells, interfering with tumor angiogenesis,

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or upregulating other nonimmune tumor-suppressive mechanisms [2].

Mushrooms have been associated with many medicinal and pharmacological properties by both eastern and western medicine. They range from lowering blood pressure, reducing cholesterol, strengthening the immune system against diseases including viral ones, improving liver function and combating tumors [3, 4]. Freshly harvested edible mushrooms were reported to contain low fat content in average ranged from 0.38% to 2.28%, indicated low calorific value (kcal) contribution of mushrooms on total daily energy intake [5]. On the other hand, the cultivated edible mushroom normally had high moisture content at more than 80%.

Mushrooms are considered to be healthy because they are low in calories, sodium, fat and cholesterol level. Therefore, they form an important constituent of a diet for a population suffering from atherosclerosis [6]. It also contain appreciable amount of dietary fibre and β -glucan, vitamin B groups, D and other useful nutrients. β -Glucans, also a components of soluble or insoluble dietary fibre (SDF, IDF) is present in appreciable amounts in mushrooms and are linked to the ability to lower blood cholesterol levels and glycemic response [7]. β -glucans are also linked with its ability to show significant immunomodulative properties, possess better antioxidant activities and exhibits scavenging capacities against free radicals [8].

Extensive studies have been done in the use of various types of fat replacer and plant dietary fibre in processed meat and poultry products in attempts at increasing dietary fibre and lowering of fat content. The effect of utilization of oat fibre [9,10], cereal and fruit fibres [11] and whey protein [12] on the physical characteristics and sensory properties of low-fat beef patties has been studied previously. Recently, researchers found that dietary grape pomace concentrate and grape antioxidant dietary fibre could be successful in retarding lipid oxidation of chilled and long-term frozen stored of raw and cooked chicken patties [13].

The incorporation of PSC as non-meat ingredient in the present study is intended to enhance the nutritional value, maintaining sensory qualities while reducing formulation cost in PBPs. This intention therefore necessitate that a thorough study to be done to determine nutritional composition, fibre content and sensory properties of poultry patty added with oyster mushroom (*Pleurotus sajor-caju*).

II. MATERIALS AND METHODS

A. Poultry patty formulation

Three poultry patty formulations were compared. Each of them contains either 0 (control), 25 and 50% of ground PSC. The