



# **Technological, Chemical And Microbiological Studies On Mushroom**

By

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## ABSTRACT

The present investigation was carried out to utilize the nutritional benefits of oyster mushroom in the preparation of some functional food products.

Chemical analysis of oyster mushroom (OM) showed that the values content were increased by many times when calculated on dry weight basis. Nine treatments of dried mushroom powders (DMP) were prepared using three drying methods (hot air drying, vacuum drying and sun drying). Also, three pre-treatments of each method of drying were used (untreated, blanching by steaming without or with steeped in citric acid). Results and statistical analysis showed, OM dried using sun without any treatment was the better than other pre-treatments and drying methods regarding chemical composition, physico-chemical properties, sensory characteristics and contents of the mineral elements and amino acids. According to the previous results, it can be used the sun DMP without any treatment successfully. The addition of DMP to some products such as meat products and bakery products, particularly beef burger and biscuits were found promising.

Beef burger was prepared with different levels of dried mushroom powder (0, 10, 15 and 20%) in addition for control sample. Effect of contribution of DMP on quality attributes as chemical composition, physical, organoleptic properties and microbiological characteristics of the product and during frozen storage at -18 °C for 90 days were studied. Chemical composition indicated that there were significant differences of burger samples at zero time and 30, 90 days of frozen storage as moisture, protein, lipids and total carbohydrate contents but no significant differences was noticed for ash contents. During frozen storage period up to 90 days all the burger samples showed gradual increases in their values of total volatile basic-nitrogen (TVB-N), acid value (AV), peroxide value (PV), thiobarbituric acid (TBA) and pH with the increase of DMP percentage. Cooking loss and cooking yield values were greater with increase DMP% than control burger. Data showed that there were acceptances in some sensory properties for the quality of all burger samples with additives from 0 till 10% DMP. Microbiological

characteristics of beef burger samples treated with DMP were nearly that of control samples. The presence of phenolic and tannin compounds in oyster mushroom which could act as antimicrobial substances had a little effects on total bacterial counts, *Staphylococcus aureus* counts, yeasts and molds count and coliforms count in burger samples.

Farinograph parameters showed that increasing DMP replacement level of wheat flour resulted in higher water absorption and mixing time, while dough stability decreased. Dried mushroom powder was incorporated with wheat flour in the preparation of biscuit. Chemical analysis indicated that mushroom biscuit showed higher contents of protein, fiber and ash. Acid value (AV), peroxide value (PV) and thiobarbituric acid (TBA) increased gradually up to the end of the storage time in all samples. Biscuits prepared by addition with DMP had a lower AV than control sample. Organoleptic properties of biscuit made from dried oyster mushroom / wheat flour blends with a replacement level of 5, 10 up to 20% showed a consumer acceptance.

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**Key Words:**

Oyster mushroom (OM), Dried mushroom powder (DMP), Functional food, Beef burger, (TVB-N), (AV), (PV), (TBA), Cooking loss, Microbiological characteristics, Sensory quality, Biscuits.