## ABSTRACT

The aim of the research is to optimize the developed fortified mushroom biscuit. The species of mushroom chosen were *Volvariella sp.* and *Cantharellus sp.* using response surface methodology (RSM) and study of textural, functional and physico-chemical properties of the developed product. The mushroom were freeze dried and powdered for incorporation in developed biscuit. The developed biscuit were baked and physical parameters were measured. The grounded developed biscuit were analyzed for antioxidant activity and functional groups present in it. Optimized conditions for *Volvariella sp*. fortified biscuit were found at 6.04% mushroom powder and 88% wheat flour and for *Cantharellus sp*. fortified biscuit were 12% mushroom powder and 94.23% wheat flour. Under optimized condition, crude fiber, hardness and overall acceptability were found to be 11.24%, 268.58g and 8.54 for *Volvariella sp*. fortified biscuit. And 12.83%, 575.63g and 7.35 for Cantharellus sp. fortified mushroom. The. Coefficient of determination ($R^2$) were 0.9289 (crude fiber), 0.9688 (hardness) and 0.8751 (overall acceptability) for *Volvariella sp.* fortified biscuit and 0.8720 (crude fiber), 0.9600 (hardness) and 0.9511 (overall acceptability) for *Cantharellus sp*. fortified biscuit which are greater than 0.8 thus signifies good fit of model. Diameter of the biscuit increases to 20.35%, 14.80% and 13.68% in control biscuit, *Volvariella sp*. biscuit and *Cantharellus sp*. biscuit, respectively after baking. Thickness also increases to 40%, 30% and 35% in control biscuit, *Volvariella sp.* biscuit and *Cantharellus sp.* biscuit, respectively. Spread ratio was found to be highest in control biscuit (3.87) and lowest in *Volvariella sp.* biscuit (3.76). Spread ratio was found highest in control biscuit(100%) and lowest in *Volvariella sp.* biscuit (97.15%). Water absorption activity was found to be decreased in fortified mushroom biscuit as compared to control biscuit. This may due to smaller starch granules binds less water as compared to control biscuit and reduce gelatinization of starch. Ash content (1.1%), crude fiber (12.71%) and protein content (7.77%) were found highest in *Cantharellus sp.* fortified biscuit. Microstructure were studied using SEM. To identify changes in functional groups like protein, carbohydrate and lipids, FTIR analyses was carried out.



Keywords: *Volvariella sp*., *Cantharellus sp*., Fortified mushroom biscuit, SEM, FTIR