

## TABLE OF CONTENTS

Sl.No.	Chapters	Page no.
1	<b>1.Introduction</b>	1 - 4
2	<b>2.Review of literature</b>	5 - 15
3	2.1 Biology of mushrooms	5
4	2.1.2 Fungus ecology	5
5	2.1.3 Mycological terms	6
6	2.2 Nutritional value and analysis	7
7	2.3 Health benefits	8
8	2.4 Mushroom based formulated products available in market and R & D work	12
9	2.5 Baked products & Bread	13
10	2.6 The need for health beneficial bread	14
11	<b>3. Material and Methods</b>	16 - 24
12	3.1 Collection of edible mushrooms	16
13	3.2 Analysis of mushroom powder	16
14	3.2.1 Proliferation Assay	16
15	3.2.2 Proximate and functional analysis of compositional compounds	17 - 20
16	3.2.2.1 Determination of crude fat	17
17	3.2.2.2 Determination of protein	18
18	3.2.2.3 Determination of ash content	19
19	3.2.2.4 Determination of moisture content	19
20	3.2.2.5 Determination of total carbohydrates	19
21	3.2.2.6 Determination of crude fiber	19
22	3.2.2.7 Determination of metabolizable energy content	20
23	3.2.2.8 Determination of total phenolic content	20
24	3.2.2.9 Determination of antioxidant activity	20
25	3.2.2.10Antibacterial and antifungal test	20

26	3.3 Formulation of low gluten bread enriched with mushroom powder and studying the shelf life	21 - 24
27	3.3.1 Materials required for bread baking	21
28	3.3.2 Procedure of bread preparation	21
29	3.3.3 Formulation of bread containing different proportions of mushroom powder and bora saul ( <i>Oryza glutinosa</i> )	22
30	3.3.4 Variable analysis of formulated bread	23
31	<b>4. Results and discussion</b>	25 - 42
32	4.1 Proliferation assay of the mushroom samples	25
33	4.2 Chemical analysis of the mushroom powder	26
34	4.3 DPPH radical scavenging activity	27
35	4.4 Total phenolic content	28
36	4.5 Anti-microbial activity of the oyster mushroom varieties species	28
37	4.6 Morphological characteristics by SEM of the mushroom powder	30
38	4.7 Analysis after formulation of mushroom bread	31 - 41
39	4.7.1 Analysis of moisture content	31
40	4.7.2 Chemical analysis of the formulated breads	32
41	4.7.3 DPPH radical scavenging activity and total phenolic content of the formulated mushroom breads.	33
42	4.7.4 Specific volume analysis	34
43	4.7.5 Color properties of crust and crumb	35
44	4.7.6 Textural properties of the breads	37
45	4.7.7 Morphological characteristics by SEM of the formulated breads	39
46	4.7.8 Sensory Analysis	41

47	4.7.9 Shelf life study of the formulated breads	41
48	<b>5. Summary</b>	43 - 45
49	<b>6. Conclusion</b>	46
50	<b>7. Reference</b>	47 - 51

---

## LIST OF TABLES

Table No.	Title	Page No.
1.1	Worldwide production of mushroom	2
2.1	Properties and mechanisms of the bioactive compounds and mushroom extracts	10-11
3.1	Various proportions in which different bread samples were baked	22
3.2	Nine point hedonic score card	24
4.1	Absorbance at 570nm for different concentration of <i>P. sajor-caju</i> distilled water extract.	25
4.2	Absorbance at 570nm for different concentration of <i>P. florida</i> distilled water extract	26
4.3	Chemical analysis of the mushroom powder	27
4.4	Zone of inhibition given against different strains by <i>P. sajor caju</i> and <i>P. florida</i>	28
4.5	Analysis of moisture content of the breads containing mushroom	31
4.6	Chemical analysis of the formulated bread	32
4.7	DPPH radical scavenging activity and total phenolic content of the formulated mushroom breads.	33
4.8	Specific volume of the formulated breads	34
4.9	Color properties (L, a, b) of crust of the formulated breads	35
4.10	Color properties (L,a,b) of crumb of the formulated breads	36
4.11	Textural properties of the formulated breads	37
4.12	Sensory analysis of the formulated breads.	41
4.13	Shelf life study of the formulated breads on the 0 <sup>th</sup> , 1 <sup>st</sup> and 2 <sup>nd</sup> day after baking	41

## LIST OF FIGURES

<b>Fig No.</b>	<b>Title</b>	<b>Page no.</b>
2.1	A sketch of a mushroom and used mycological terms	5
4.1	Absorbance at 570nm for different concentration of <i>P. sajor-caju</i> distilled water extract.	25
4.2	Absorbance at 570nm for different concentration of <i>P. florida</i> distilled water extract.	26
4.3	Zone of inhibition shown by the two mushroom species against pathogens	29
4.4	SEM of mushroom powder	30
4.5	Optimized best bread combination	39
4.6	SEM images of bread	40

## LIST OF ABBREVIATIONS

---

1.  $\Delta E$  : Change in color
  2. AOAC : Association of Official Analytical Chemists
  3. ATCC : American Type Culture Collection
  4. BHT : Butylated hydroxyl toluene
  5. CD : Celiac disease
  6. CFU : Colony forming units
  7. DF : Dietary fiber
  8. DPPH : 2,2-diphenyl-1-picrylhydrazl
  9. FAO : Food and Agriculture Organization
  10. GAE : Gallic acid extract
  11. GF : Gluten-free
  12. MTT : (3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide)
  13. PDA : Potato dextrose agar
  14. RSA : Radical scavenging activity
  15. SEM : Scanning electron Microscopy
  16. TBC : Total bacterial count
  17. TPA : Texture profile analysis
  18. TPC : Total phenolic content
  19. WA : Wheat allergy
-