Mushroom is a fungi belonging to basidiomycetes family. It is used for several purposes such as medicine, food, sweets. The present work was started with an aim to compare the bioactive compounds namely (protein, total phenol, total carotenoid, total flavonoid), of different types of mushroom. The results showed that white button mushroom had highest amount of protein content (4.93±0.12 µg g⁻¹). Maximum content of flavonoids (5.41±0.15 mg/100 g) was observed the oyster mushroom (paddy straw). Total phenol content was highest (16.21±0.44 mg/100 g) in oyster mushroom (paddy straw). Highest amount of total carotenoids (16.21±0.44 mg/100 g) was seen in oyster mushroom (paddy straw). The enzymatic antioxidant polyphenol oxidase was observed to be highest (31.74±3.49 m mol min⁻¹ g⁻¹fw).

Keywords: Mushroom, Bioactive compound, Enzymatic antioxidant

INTRODUCTION

A mushroom is as “a macrofungus with a distinctive fruiting body which can be either epigeous or hypogeous. The macrofungi have fruiting bodies large enough to be seen with the naked eye and to be picked up by hand” Most mushroom species are under the Basidiomycota and Ascomycota, the two phyla under the kingdom fungi (Kang et al., 2004). A bioactive compound is a compound that has effect on any living organism, tissue or cell. In the field of nutrition bioactive compound is distinguished from essential nutrients while nutrients are essential for sustainability of body. Bioactive compounds are not essential since the body can function properly without them, or because nutrients fulfil the same function. Bioactive compounds are extra nutritional constituents that typically occur in small quantities in food and can influence the health of living beings. Some examples of bioactive compounds are flavonoids, caffeine, carotenoids, creatine, choline, coenzyme Q, anthocyanins, polyphenols, linolenic acid, β-carotene, lycopene (Patel et al., 2012). They have received an incredible interest in recent decades with the realization that these are good sources of delicious food with excellent flavor, aroma, exotic tasteful appeal and high nutritional traits because they contain good quality proteins, unsaturated fatty acids, minerals and vitamins (Hussein et al., 2015). The wild mushrooms provide a significant source of nutrients that can be used as food or in traditional medicine (Janpoor et al., 2016). Antioxidants are the scavengers of free radicals and are believed to help the body fight chronic diseases (Peter et al., 2014).

MATERIALS AND METHODS

Investigations of Bioactive Compounds

Estimation of protein content: Protein was estimated by the method of (Lowry et al., 1951) by using BSA as standard
Comparison of Bioactive Compounds and Enzymatic Antioxidants in White Button Mushroom and Oyster Mushroom
Reena Sahu and Yashodhara Verma

protein. Using a calculation curve, the results were expressed in µg/ml. Estimation of total phenols: Total phenol content in the samples was estimated by the method of Hossain et al. (2013). The total phenols g⁻¹ tissue was calculated from the standard graph. Estimation of Flavonoids: Flavonoid content in mushroom was estimated according to the method given by Chang et al. (2012). Flavonoid content was expressed in term of Quercetin equivalent (mg/g of extracted compound). Estimation of carotenoids: The carotenoid content in mushroom was estimated according to the method given by Moore et al. (2003). The carotenoid content (mg ml⁻¹) in the sample was calculated using a calibration curve prepared using standard high purity β-carotene.

1.2 Assays of enzymatic antioxidants

RESULTS AND DISCUSSION
The highest protein content was observed in white button mushroom (4.93±0.12 µg g⁻¹) followed by oyster mushroom (paddy straw) (3.89±0.11 µg g⁻¹). Ogoke et al. (2015) reported significantly highest protein content in white button mushroom. Therefore, results of the present study are in agreement with the past studies done by various workers.

The highest phenol content was observed in oyster mushroom (paddy straw) (16.21±0.44 mg/100 g) followed by white button mushroom (15.24±0.54 mg/100 g). Kaviyarasan et al. (2014) reported significantly highest phenol content in oyster mushroom (paddy straw). Therefore, results of the present study are in agreement with the past studies done by various workers. The highest carotenoid content was observed in oyster mushroom (paddy straw) (74.61±0.21 mg/100 g) followed by white button mushroom (72.66±0.22 mg/100 g). McGowan (2001) reported significantly highest carotenoid content in oyster mushroom (paddy straw). Therefore, results of the present study are in agreement with those reported by other workers. The highest flavonoid content was observed in oyster mushroom (paddy straw) (5.41±0.15 mg/100 g) followed by white button mushroom (3.46±0.19 mg/100 g). Arthy et al. (20014) reported significantly highest flavonoid content in oyster mushroom (paddy straw). Therefore, results of the present study are in agreement with the past studies done by various workers.

Valko et al. (2007) reported significantly highest polyphenol oxidase activity in white button mushroom. Therefore, results of the present study are in agreement with the studies done by the various workers. Akpaja et al. (2003) reported significantly highest guiacol peroxidase activity in white button mushroom. Therefore, the results of present study are in agreement with the studies done by the various workers. Yue et al. (2012) reported significantly highest Ascorbate peroxidase activity in white button

### Table 1: APX, PPO, GR, GPX Activity in Selected Mushroom Species

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Selected Mushroom</th>
<th>PPO (m mol min⁻¹ g⁻¹ fw)</th>
<th>APX (m mol min⁻¹ g⁻¹ fw)</th>
<th>GR (m mol min⁻¹ g⁻¹ fw)</th>
<th>GPX (m mol min⁻¹ g⁻¹ fw)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White Button Mushroom</td>
<td>31.74±3.49</td>
<td>10.07±2.17</td>
<td>15.95±0.47</td>
<td>20.18±0.27</td>
</tr>
<tr>
<td>2</td>
<td>Oyster mushroom (paddy straw)</td>
<td>29.43±3.11</td>
<td>9.09±2.11</td>
<td>14.87±0.41</td>
<td>19.11±0.22</td>
</tr>
</tbody>
</table>

### Table 2: Content of Bioactive Compounds in Selected Mushroom Species

<table>
<thead>
<tr>
<th>S. No</th>
<th>Selected Mushroom</th>
<th>Protein (µg g⁻¹)</th>
<th>Total Phenols (mg/100 g)</th>
<th>Total Carotenoids (mg/100 g)</th>
<th>Total Flavonoids (mg/100 g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White Button Mushroom</td>
<td>4.93±0.12</td>
<td>15.24±0.54</td>
<td>72.66±0.22</td>
<td>3.46±0.19</td>
</tr>
<tr>
<td>2</td>
<td>Oyster mushroom (paddy straw)</td>
<td>3.89±0.11</td>
<td>16.21±0.44</td>
<td>74.61±0.21</td>
<td>5.41±0.15</td>
</tr>
</tbody>
</table>

This article can be downloaded from http://www.ijfans.com/currentissue.php
Comparison of Bioactive Compounds and Enzymatic Antioxidants in White Button Mushroom and Oyster Mushroom
Reena Sahu and Yashodhara Verma

Therefore, results of the present study are in agreement with the past studies done by the various workers. Wasser et al. (1999) reported significantly highest Glutathione reductase activity in white button mushroom. Therefore, results of the present study are in agreement with the past studies done by various workers.

CONCLUSION
On the basis of above investigations it can be concluded that when oyster mushroom is grown on paddy straw it becomes rich in total phenol, carotenoid and flavonoid, thus it can be said to be nutritionally significant. At the same time white button mushroom is a rich source of protein.

REFERENCES
Comparison of Bioactive Compounds and Enzymatic Antioxidants in White Button Mushroom and Oyster Mushroom
Reena Sahu and Yashodhara Verma

