

1.	Title (17.4.3.71)	Effect of Blanching and Drying on Quality of Oyster Mushroom (<i>Pleurotus ostreatus</i>)
2.	Background information	<p>Oyster mushroom (<i>Pleurotus ostreatus</i>) is the popular mushroom variety grown in Gujarat. It is nutritionally rich, considered to be a complete healthy food and common edible mushroom. But, it is highly perishable in nature and has limited shelf life. Hence, it requires protection from spoilage during their preparation, storage and distribution.</p> <p>Hot water blanching is a cooking process in which a mushroom, dipped in the hot water at 95°C for 2 min and then removed and cooled rapidly to halt the blanching process. It is generally done to inactivate surface enzymes, removal of chemicals, decrease of microbial load and improvement of texture.</p> <p>Freeze-drying is one of the advanced preservation techniques which also known as lyophilization or cryo-desiccation meant to extend the shelf life of biological materials. Freeze-drying is a method of removing water by sublimation of ice crystals from ice-cold material. Freeze drying is carried out below 4.58 mmHg pressure. Tray drying is another method where products are exposed to hot dry air until they dry enough to store at room temperature. Different drying methods used to reduce the moisture content of the product but along with it other quality parameters can also get affected and change. In the present study, effect of blanching and drying methods on the quality parameters of the oyster mushroom will be analyzed.</p>
3.	Objectives	<ul style="list-style-type: none"> ▪ To find out the effect of blanching and drying on shelf life of oyster mushroom ▪ To evaluate the quality parameters of dried Oyster mushroom during storage
4.	Principal Investigator and Co-PIs	<p>PI: Dr. Harish Suthar, Assistant Professor, PHT, ACHF, NAU Co-PI: Er. F. M. Sahu, Assistant Professor, PHT, ACHF, NAU Dr. Nitin Patel, Head, & Professor, PMBB, ACHF, NAU Dr. Dev Raj, Head, & Professor, PHT, ACHF, NAU.</p>
5.	Location and Agro climatic Zone	Dept. of Post Harvest Technology, ACHF, NAU, Navsari
6.	Name of Research Scheme and B. H.	Centre of Excellence on PHT (B. H. 12935)
7.	Year and Season	2021-22
8.	Crop and Variety	Oyster mushroom

9.	Experimental Details	<p>1. Experimental Design: FCRD 2. Repetitions: 3 3. Treatments: 10</p> <p>Factor 1: Blanching (B) levels = 2 With hot water blanching at 95°C for two min (B₁) Without Blanching (B₂)</p> <p>Factor 2: Drying methods (D) =5 Freeze-drying at 50°C (D₁) below 4.58 mmHg vacuum pressure Freeze-drying at 60°C (D₂) below 4.58 mmHg vacuum pressure Tray drying at 50°C (D₃) Tray drying at 60°C (D₄) Sun drying (D₅)</p> <p>Treatment Combinations:</p> <table border="1" data-bbox="579 707 1485 949"> <tr> <td>Treatment Combi. (B X D)</td> <td>B D_{1 1}</td> <td>B D_{2 1}</td> </tr> <tr> <td></td> <td>B D_{1 2}</td> <td>B D_{2 2}</td> </tr> <tr> <td></td> <td>B D_{1 3}</td> <td>B D_{2 3}</td> </tr> <tr> <td></td> <td>B D_{1 4}</td> <td>B D_{2 4}</td> </tr> <tr> <td></td> <td>B D_{1 5}</td> <td>B D_{2 5}</td> </tr> </table> <p>Sample size: 20 packets of 50g each of oyster mushroom will be taken per repetition per treatment Storage period: 0, 3 and 6 months</p>	Treatment Combi. (B X D)	B D _{1 1}	B D _{2 1}		B D _{1 2}	B D _{2 2}		B D _{1 3}	B D _{2 3}		B D _{1 4}	B D _{2 4}		B D _{1 5}	B D _{2 5}
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10.	Observations to be recorded	<p>1. <u>Physico-chemical parameters</u> Recovery (%) Drying time (h) Moisture content (%) Water activity Total Soluble Solids (%) Total sugar (%) Protein (%) Rehydration ratio NEB (OD_{440nm}) Ascorbic acid content (mg/100 gm)</p> <p>2. <u>Sensory parameters by 9 point hedonic scale</u> Colour Texture Taste Overall acceptability</p> <p>3. <u>Microbiological parameters (CFU/g):</u> Total plate count Yeast and Mould count Coliforms count</p> <p>Ancillary observations: Days for spawn run and Biological efficiency</p>															
11.	Expected outcome	<p>Expected outcome will be information regarding the effect of the blanching and drying methods on the quality of oyster mushroom. Duration of obtained dried oyster mushroom up to which it can be</p>															

		<p>stored at room temperature and remain consumable as well as stable in terms of microbial, physico-chemical and sensory properties.</p>
		<p>The substrate (paddy straw) was chopped into small pieces (2 inches length). Further, it was soaked in water treated with Formalin (500 ppm) and Carbendazim (75 ppm) for 14-18 h for pasteurization purpose.</p> <p style="text-align: center;">⇓</p> <p>Spawning of <i>P. ostreatus</i> was done in layers using 5% spawn of wet weight of the substrate. Spawn were mixed after each layer of paddy straw (4 cm thickness) in Polythene bags (24×16 cm with 100 gauge) having holes at distance of 10 cm.</p> <p style="text-align: center;">⇓</p> <p>Suitable temperature and relative humidity were maintained for incubation and mushroom growth.</p> <p style="text-align: center;">⇓</p> <p>Harvest of developed oyster mushroom - Washing in water containing 0.1% KMS</p> <p style="text-align: center;">⇓</p> <p>Hot water blanching (In case B₁ Only) at 95°C for 2 min</p> <p style="text-align: center;">⇓</p> <p>Drying of Blanched/Un-blanched Oyster mushroom by different methods</p> <p style="text-align: center;">⇓</p> <p>Packaging of dried mushrooms in polythene bags</p> <p style="text-align: center;">⇓</p> <p>Storage at ambient condition for 6 months for further analysis</p>