

Preparation of Tempeh Spores Powder

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Abstract : Study production of tempeh inoculums powder by freeze-drying comparison with dry at 50°C and the sun bask for developing efficient tempeh inoculums for tempeh producing. *Rhizopus oligosporus* in PDA slant cultures was incubated at 30°C for 3-5 days until spores and mycelium. Preparation spores suspension with sterilized water and then count the number of started spores. Fill spores suspension in Rice flour and soy flour, mixed with water (in the ratio 10: 7), which is steamed and sterilized at 121°C 15min. Incubated at room temperature for 4 days, count number of spores. Then take the progressive infection and full spore dough to dry at 50°C, sun bask, and lyophilize. Grind to powder. Then pack in plastic bags, stored at 5°C. To investigate quality of inoculums which use different methods, tempeh was fermented every 4 weeks for 24 weeks of the experiment. The result found that rice flour is not suitable to use as raw material in the production of powdered spores. Fungi can growth rarely. Less number of spores and requires more time than soy flour. For drying method, lyophilization is the least possible time. Samples from this method are very hard and very dark and harder to grind than other methods. Drying at 50°C takes longer time than lyophilization but can also set time use for drying. Character of the dry samples is hard solid and brown color, but can be grinded easier. The sun drying takes the longest time, can't determine the exact time. When the spore powder was used to fermented tempeh immediately, product has similar characters as which use spores that was fresh prepared. The tempeh has normal quality. When spore powder stored at low temperature, tempeh from storage spore in weeks 4, 8 and 12 is still normal. Time spending in production was close to the production of fresh spores. After storage spores for 16 and 20 weeks, tempeh is still normal but growth and sporulation were take longer time than usual (about 6 hours). At 24 week storage, fungal growth is not good, made tempeh looks inferior to normal color, also smell and texture.

Keywords : freez drying, preparation, spores powder, tempeh

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