

H. V. BASYUL, H. B. PALIY

*Odessa National Mechnykov University,
Department of Microbiology and Virology*

**LACTIC ACID PRODUCING ACTIVITY OF
LACTOBACILLI STRAINS, PERSPECTIVE FOR
MUSHROOMS FERMENTATION**

The production of fermented foods requires the proper substrates, microbial populations, and environmental conditions to obtain the desired end product.

Pleurotus ostreatus occupies a particular place among the edible mushrooms - less strict and ecologically benefit for growing mushrooms.

The mushrooms bioprocessing with the using of sourdough represents the optimal method of their preservation. Choosing of *Lactobacillus* as the starter cultures for the fermented products preparing is regular, it is caused by the lactobacilli immunomodulative properties.

In cultivation period mushrooms undergo by the semination of competitive microorganisms - microscopic moulds and bacteria. The lactic acid extracted by lactic acid fermentation is the natural preserving agent inhibited the growth of the spoilage agent as a part of the mushrooms microbiota.

Thereby the present research has been conducted to study lactobacilli lactic acid producing activity, the most active strain selection, optimal fermentation temperature determination, spice and salt influence on growth and acid producing ability of the selected strain.

The material of investigation was four strains of lactobacilli isolated from *P. ostreatus*: *L. plantarum* Po1, *L. plantarum* Po2, *L. plantarum* SPo5 and *L. plantarum* SPo12. *L. plantarum* has been suggested as a starter culture for mushrooms fermentation because of its ability to predominate natural fermentation.

Such parameters as the acid producing rate in Terner degrees (°T) /hour, °T/day sink, acid producing activity and limit acidity were described for the investigated strains.

The acid producing rate ranged from 30 till 50,7 °T/hour and from 100 till 170 °T/day sink. Strains *L. plantarum* Po1 and *L. plantarum* Po2 were characterized by maximal acid producing of 145 and 170 °T/day sink and limit acidity came to 240 and 300 °T, accordingly. The pH level after fermentation decreased to 4 with all of the lactobacilli strains.

The lactobacilli starter culture regard to active acid producer if the lactic acid output not less than 0,5%/15 hours. The produced lactic acid quantity varied from 0,65 till 1,4%/15 hours among tested strains and indicated high activity all of the represented lactobacilli.

Lactobacilli strain *L. plantarum* Po2 was selected as the most active acid producer. Different temperatures were compared by influence on acid producing and it was noted that *L. plantarum* Po2 works best at temperatures of 11 - 50 °C, besides the temperature of 4 °C conducted to acid producing ability maintain.

As mushrooms fermentation assumes use of NaCl and spices, it was expediently to investigate it influence on *L. plantarum* Po2 growth and acid producing ability.

Up to 20 different species were examined: anise, basil, bay leaf, celery root, cherry sheet, coriander, fennel, garlic, ginger, karri, nutmeg, onion, oregano, paprika, pepper white, parsley, pepper fragrant, pepper red, pepper black, rosemary, savory, tarragon, turmeric, and NaCl in concentration of 4%. All mentioned above spices, as salt didn't inhibit *L. plantarum* Po2 growth and acid-forming activity.

So that, *L. plantarum* Po2 has been selected for *P. ostreatus* fermentation by the criteria of biotechnological suitability, such as acid-producing activity, temperature, species and salt tolerance and can be recommended as a starter culture.

Рекомендована к печати на заседании кафедры микробиологии и вирусологии, протокол № 4 от 29.11.2010 г.