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Development of a improved Nuruk using mycelium of a mushroom, *Phellinus* sp. J21

Jun Young Joo, Hak-Seob Lim¹, Min-Jeong Seo,
Ji-Eun Kim, Kyung Tae Chung and Yong Kee Jeong

Department of Life Science and Biotechnology, Donggeui University, Busan 614-714,
¹Institute of BIO, MILLENNIUM PROMISE CO.,LTD., Gijang-gun, Busan 619-962, Korea,

Nuruk has been used to play important roles in the traditional Korean alcoholic fermentation. It is manufactured by proliferation of wild microorganism on a starch substrate of crushed or whole wheat or barley. The traditional Korean wine fermentation ability is depended on microorganism, such as fungi, mucor, yeast grown in Nuruk. In this study, we developed a new Nuruk using mycelium (*Phellinus* sp. J21) of a mushroom instead of fungi. *Phellinus* sp. J21 was cultured at 25°C for 6 days and then inoculated into the autoclaved crushed-wheat. The inoculated wheat incubated at 25°C for 3~4 days. The "Sangwhang Nuruk" is produced by proliferation of *Phellinus* sp. J21 on crushed wheat. The amylase and protease activities of the "Sangwhang Nuruk" and "Kawachii Nuruk" were analysed. In addition, the alcoholic fermentation abilities of these Nuruks were assayed. In amylase activity, the "Sangwhang Nuruk" showed 1.2 fold activity than the "Kawachii Nuruk", which manufactured by proliferation of *Aspergillus kawachii* on crushed wheat. In protease activity, there is no significant difference between Sangwhang and Kawachii Nuruk. However, the Nuruk, co-cultured with *Phellinus* sp. J21 and *Aspergillus kawachii*, shows 1.5 fold activity than mono-cultured. Furthermore, the co-cultured Nuruk showed more higher percentage of alcohol than "Sangwhang Nuruk" in alcohol fermentation. These results suggested that the co-cultured Nuruk is more useful than mono-cultured Nuruk in alcohol fermentation.