Quality Characteristics of *Yakju* with Heat Treatment *Nuruk*  
(열처리 누룩을 활용한 약주의 품질특성)

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*Yakju* is liquor made with rice and *nuruk*. When aging long, it produces unique off-flavor. Particularly, as isovaleraldehyde of *Yakju*, an ingredient of soy sauce smell, was produced by oxidation of alcohol dehydrogenase (ADH) from isoamyl alcohol of *suldeot* (rice-wine mash), the effect of controlling off-flavor of *yakju* could be identified by controlling ADH enzyme with heat treatment. As a result of investigating ADH activity (milliunit / kg) in *nuruk* sold in Korea, traditional *nuruk* showed activity of 8.90-28.82, modified *nuruk* 245.11, yellow koji (*Aspergillus luchuensis*) 18.30. After heat treatment (50-80°C, 30 min) of the modified *nuruk*, which showed the highest ADH activity among *nuruk*s, *yakju* was made. As *yakju* was aging at 45°C for 1 year, its quality changes were observed. Compared to the control plot, the heat treatment *nuruk* plot showed significant reduction in amino acidity and soluble solids; after aging, the value of chromaticity L increased 2.1 times more than before; the value of a reduced 11.4 times, and the value of b 8.9 times. In addition, as for ADH activity(milliunit / L) of *yakju*, in the untreated control plot it increased by 15.82% after aging, while in the 50-60°C heat treatment plot it increased by 0.43-0.51%, which shows heat treatment can control ADH activity of *yakju*. Compared to the untreated control plot, in the heat treatment plot isoamyl alcohol(3.73 times) and active amylalcohol(4.91 times), main ingredients of *yakju* flavor, increased; forming of furfural, isovaleraldehyde, propanoic acid, HMF, kinds of benzene and kinds of phenol, ingredients of off-flavor, were controlled. This results show if *nuruk*, used for making *yakju*, is aged after heat treatment, ingredients of off-flavor and browning of *yakju* can be controlled through the control of ADH enzyme activity.  

**Key words** : Alcohol dehydrogenase, Heat treatment, *Nuruk, Yakju*  
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