

## G12. Detection of Spurious Jindo Hongju

Kap Seong CHOI, Bo Hyeon SONG, and Jungho KIM<sup>1</sup>  
Dept. of Food Sci. & Tech., and <sup>1</sup>Dept. of Agric. Chem.  
Suncheon National University

Jindo Hongju is an unique red-colored traditional distilled wine of Korea. The unique attractive color of Jindo Hongju is due to the pigments of gromwell (*Lithospermum erythrorhizon*) root, derivatives of naphthoquinone such as shikonin and acetylshikonin. Which are extracted during the distillation process. The attractive color of the gromwell pigments is easily changed to dark red or to brown causing deterioration of the quality of Jindo Hongju. Due to the discoloration of the pigments and to the limited supply of gromwell roots, some brewers manufacture spurious Jindo Hongju using artificial colorants. This study was performed to devise a simple method of detecting spurious Jindo Hongju products.

The color of the gromwell pigments was greatly affected by pH change and the change could be demonstrated by the change of the absorption spectrum. At pH 4.0 the normal pH of Jindo Hongju, the absorption spectra of gromwell pigments and genuine Hongju products showed an absorption maximum of 520 nm. The absorption maximum was shifted to 570 nm and to 616 nm as the pH was raised to 7.0 and 11.0 respectively. This transition due to the pH change was also demonstrated on CIE chromaticity diagram.

The characteristic transition due to pH change of gromwell pigment solution was not observed with an artificial colorant (red No.2) which was suspected to be used in the manufacture of imitation products. The absorption spectra of most of the Jindo Hongju collected from the market were similar to that of the gromwell pigments and showed the characteristic transition due to pH change with the addition of NaOH. However, with a few of the products, the absorption spectra was similar to that of the artificial colorant and the characteristic transition due to pH change was not observed, indicating these products might have been forged.

The result of study suggests that the transition of the absorption spectrum and the change of the color due to pH change be used for the detection of imitation products. Farther more, since, at pH above 9.0, the color of the gromwell pigments and genuine Jindo Hongju could be visually differentiated from that of the artificial colorant and forged products, it might be possible that the forged products be easily detected by raising the pH to above 9.0 and visually comparing the color with that of the gromwell pigment at the same pH.