2-Acetyl-1-Pyrroline Concentration of the Aromatic Vegetable Soybean “Dadacha-Mame”

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Introduction and Methods

“Dadacha-mame” varieties of vegetable soybean have a special market vale due to its pleasant flavor. It is said that the peculiar odor of “Dadacha-mame” had sensuous similarity to that of aromatic rice (Masuda, 1990). We investigated the concentration of 2-acetyl-1-pyrroline (AP), which is the key flavor compound of the peculiar aroma of aromatic rice, in “Dadacha-mame” varieties and other soybean varieties.

The AP was extracted from each freeze-dried soybean powder with ethanol. After filtration, the extract was injected to gas chromatography / mass spectrometry (GC/MS) for identification and quantification of AP.

Results and Conclusions

While AP was detected from the developing seeds of “Dadacha-mame” and “Chakaori” groups, was not detected from the other vegetable soybeans. Additionally the concentration of AP in “Dadacha-mame” varieties was high enough for sensory detection by human being. The facts indicated that AP was, at least, one of the most important compounds, which distinguish the aromatic vegetable soybean varieties such as “Dadacha-mame” from the others. Interestingly some developing seeds of common soybeans also contained this aromatic compound.

The concentration of AP in “Dadacha-mame” seeds changed dynamically according to the developing stages. During growing to vegetable soybean, the concentration of AP in the young seeds increased gradually, and it reached for the maximum concentration in the edible period for edamame. However, the concentration of AP began to decrease with maturation of the soybean, and finally it became to be not detectable in the well-matured “Dadacha-mame” seeds.

References

Masuda, R.: Cold storage of vegetables (16) Vegetable soybean, Refrigeration, 64, 359-376 (1989).