

Comparison of Fatty Acids in Adzuki Bean [*Vigna angularis*] according to Different Irrigation Conditions

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[Introduction]

Leguminous seeds are valuable crops as an important source of nutrient compounds such as protein, dietary fiber and minerals. Adzuki bean are a leguminous crop as well as popular materials in various confections. The consumption of adzuki bean is concentrated in Asia, where the bean has its most important economic value. The water in the crop cultivation shows difference according to the variety of crop, cultivations period and climatic condition.

[Materials and Methods]

Adzuki bean germplasms were donated from the gene bank of the RDA (Rural Development Administration, Suwon, Gyeonggi-Do, Korea). Research was conducted at the laboratory and greenhouse of the department of crop science. Seeds were sown in pots (40 cm in diameter) with silty-loam soil (silt 60%, sand 20%, clay 20%) pots were assigned a completely randomized design with 20 replicates. The purpose of this study is to determine the effect of different irrigation conditions (100 mL/3 days, 100 mL/6 days) in contents of fatty acids of six adzuki bean cultivars. Fatty acid analysis was performed using an Agilent GC 7890B system coupled to a flame ionization detector (FID). A capillary column was used to separate the 37 FAMES. The injection volume was 1 μ L in 50:1 split mode. The carrier gas was helium at 10 mL min⁻¹. The inlet temperature of the GC oven was programmed as follows: 100°C for 2 min, 150°C (5°C · min⁻¹) for 2 min, and 240°C (2°C · min⁻¹) for 5 min. The temperature of the FID was set to 250°C. The total analysis time was 64 min.

[Results and Discussions]

The total fatty acids were showed higher concentration in 100 mL/3 days (114.51 mg g⁻¹) than 100 mL/6 days (105.76 mg g⁻¹) water environment. There is no significant in the average of total fatty acid contents depending on water conditions. Pentadecanoic acid (C15:0) was most abundant in adzuki beans (41.94 mg g⁻¹) and α -linolenic acid (10.84 mg g⁻¹), palmitic acid (8.42 mg g⁻¹) were the next abundant compounds.

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