Anthocyanin and Phenolic Acid Profiles in Purple, Red and Non-Pigmented Rice during Germination

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https://doi.org/10.12982/CMUJNS.2020.0054

Received: *November 19, 2019*
Revised: *February 19, 2020*
Accepted: *March 11, 2020*

ABSTRACT

There is a growing interest in using germinated rice in health products based on their antioxidant properties but studies exploring differences in pigmented and non-pigmented rice types are limited. Therefore, anthocyanin and phenolic acid contents and composition were quantified using UPLC over 6 days of germination in three pigmented (two purple and one red) and one non-pigmented rice genotypes. Most of the anthocyanin content in purple rice, mainly cyanidin-3-glucoside and peonidin-3-glucoside, was lost during the imbibition and radicle emergence phase of germination. By contrast, there were only small changes in free and bound phenolic acid fractions over the 6 days of germination in all genotypes. Vanillic and ferulic acids comprised the main components of the free and bound pools, respectively. Vanillic acid contents, but not ferulic acid, were considerably greater in purple rice than in red and non-pigmented rice. Germination rapidly decreased the anthocyanin content in purple rice, but only had a minor effect on the free and bound phenolic acids in purple, red and non-pigmented rice. The increasing content of bound p-coumaric, ferulic and vanillic acids in germinated purple rice may provide an opportunity to develop rice products as functional foods.

Keywords: Pigmented rice, Purple rice, Germination, Anthocyanin, Phenolic acid