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The Role of *OsMYB1* for Anthocyanin Biosynthesis in Rice Pericarp

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Rice pericarp exhibits the various colors, such as black, red or white due to the accumulation of anthocyanins and proanthocyanidins (PAs), respectively or not. Due to the health benefits of pigmented rice, biosynthesis and accumulation of anthocyanins and PAs in grains is an important breeding goal for breeders and researchers.

The anthocyanin biosynthesis is known to be cooperatively regulated by a conserved MBW (MYB-bHLH-WDR) transcriptional factor (TF) complex. However, the molecular mechanism underlying pericarp pigmentation is unknown. Here, we identified the R2R3 MYB gene, designated as *OsMYB1*, for rice pericarp pigmentation and characterized it through genetic and molecular approaches. Through the transactivation and Y2H analysis, it revealed that *OsMYB1* had the auto-activation activity and was able to interact with *OsbHLH1*, but not *OsWD40*. Additionally, co-operatively interaction between *OsMYB1* and *OsbHLH1* showed the increment of the transcriptional activity of anthocyanin biosynthetic genes. Sequences analysis confirmed that the *OsMYB1* from black rice cultivars was different of that from white and red rice cultivars. Based on these data, we developed insertion/deletion (InDel) marker for seed color discrimination. Taken together these results, it suggests that *OsMYB1* play a crucial role for anthocyanin biosynthesis in rice pericarp, combined with *OsbHLH1*.

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