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Development of molecular markers for the selection of soybean lines containing high levels of natural products in soybean seeds

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Most of wild soybean seeds contain higher levels of natural products derived from the flavonoid pathway such as proanthocyanidins, anthocynins, and isoflavones than cultivated soybean seeds. The objective of this study is to develop molecular markers to establish a marker-assisted selection scheme for these natural products-related traits. A population of 112 F₉ recombinant inbred lines generated by an interspecific cross between a *Glycine max* line 'Hwangkeumkong' and a *G. soja* Siebold & Zucc. line IT182932' was used to construct a frame map consisting of 20 soybean linkage groups. The frame map contains over 300 SSR, RAPD and transposon markers. PCR-based molecular markers cosegregating with the I and T loci that control pigmentation of the seed coats determined by secondary metabolites derived from the flavonoid pathway including anthocyanins and proanthocyanidins in soybean have been developed. Three SSR and one dominant STS markers cosegregating with the I locus and one codominant STS and one SNP markers cosegregating with the T locus were developed. Future efforts will be directed to develop more transposon markers to saturate the frame map and to develop EST- and BAC-based molecular markers targeted to genetic loci of the natural products-related traits.

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