



Two-step identification of taro (*Colocasia esculenta* cv. Xinmaoyu) using specific psbE-petL and simple sequence repeat-sequence characterized amplified regions (SSR-SCAR) markers

H.J. Dai^{1*}, Y.M. Zhang^{2*}, X.Q. Sun², J.Y. Xue², M.M. Li², M.X. Cao¹, X.L. Shen¹ and Y.Y. Hang²

¹Seed Administrative Station of Suzhou, Suzhou, China

²Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, Nanjing, China

*These authors contributed equally to this study.

Corresponding authors: X.L. Shen / Y.Y. Hang

E-mail: szseed@126.com / hangyueyu@cnbg.net

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ABSTRACT. *Colocasia esculenta* cv. Xinmaoyu is an eddoe-type taro cultivar local to Taicang, Jiangsu Province, China; it is characterized by its pure flavor, glutinous texture, and high nutritional value. Due to its excellent qualities, the Trademark Office of the State Administration for Industry and Commerce of the People's Republic of China awarded Xinmaoyu, a geographical indication certification in 2014. Therefore, there is an urgent need to develop an efficient molecular marker for the specific identification of this cultivar, which would greatly facilitate the

conservation and utilization of this unique germplasm resource. In the present study, amplifying the psbE-petL fragment from two dasheen-type and seven eddoe-type taro cultivars revealed three conserved insertions/deletions among sequences from the two taro types. Based on these sequence differences, a pair of site-specific primers was designed targeting the psbE-petL sequence from the dasheen-type taro, which specifically amplified a DNA band in all individuals from cultivars of this type, but not in those from the seven eddoe-type cultivars. To discriminate Xinmaoyu from the other eddoe-type taro cultivars, a pair of simple sequence repeat-sequence characterized amplified region (SSR-SCAR) primers was further developed to specifically amplify a DNA band from all Xinmaoyu individuals, but not from individuals of other eddoe-type taro cultivars. In conclusion, through a two-step-screening procedure using psbE-petL and SSR-SCAR markers, we developed a pair of primers that could specifically discriminate Xinmaoyu from nine taro cultivars commonly cultivated in Jiangsu Province and Fujian Province.

Key words: Taro; Xinmaoyu; psbE-petL; SSR; SCAR; Two-step marker