Expression of miraculin protein in transgenic Meiwa kumquat plant

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Miraculin, a taste-modifying protein, is isolated from a tropical miracle fruit of West Africa. This protein by itself is not sweet, but it has unusual property of modifying a sour taste into a sweet taste. This unique property has led to increasing interest to this protein. In this study, recombinant miraculin protein has been transformed in the Meiwa kumquant plants and characterized the properties of the recombinant protein. To obtain Meiwa kumquant transgenic plants, the DNA fragment encoding miraculin gene was cloned into a plant expression vector under the control of CaMV35S promoter and transferred to the epicotyls segments via Agrobacterium tumefaciens. Transgenic plants lines were obtained from kanamycin-resistant epicotyls segments that expressed the recombinant protein stably and found correct form. The recombinant miraculin protein formed a disulfide–linked dimer similar to that of the native miraculin and retained taste-modifying activity, suggesting kumquat tree is a good bioreactor to produce the recombinant miraculin protein.

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