Edible canna (Canna edulis) as a complementary starch source to cassava for the starch industry

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Abstract: Edible canna (Canna edulis Ker) as an alternative starch source was evaluated on the basis of genetic characteristics, agronomic traits and starch properties. Four canna varieties indigenous to Thailand were examined including Thai-green, Japanese-green, Thai-purple and Chinese-purple and compared with cassava (Manihot esculenta Crantz). Using the Random Amplified Polymorphic DNA (RAPD) technique employing ten 10-base primers, four primers implied that at least three types of canna including Thai-green, Japanese-green and Thai/Chinese-purple existed and corresponded to plant characteristics as identified by flower, stem, leaf and rhizome colors. Despite genetic diversification, starch properties were not variable. All four varieties produced 30.4-38.4 tonne/ha of rhizomes with starch content about 13% (wet basis). Starch yields of canna (4.1-4.9 tonnes/ha) were comparatively lower than cassava (6.5 tonnes/ha). The starches were characterized by giant granules (10-80 mum), and compared with cassava starch pastes had a higher peak viscosity (930-1060 BU for canna starches and 815 BU for cassava starch), occurring at a higher temperature. Pastes of canna starch were more stable and when cooled, viscosity increased to 1800 BU. Gelatinized pastes of canna starches also rapidly formed good gels on cooling. It is evident that edible canna provides starches with very attractive properties and totally different from cassava and is the greatest promise for the new base starch to be employed complementarily with cassava starch. (C) 2002 Published by Elsevier Science B.V.

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