

A Comparative Study on the Phenolics Composition and Antioxidant Properties of Water Yam Landraces in Kerala, India

Authors : Anumol Jose, Sajana Nazar, M. R. Vishnu, M. Anilkumar

Abstract : Water yam is an underutilized tropical tuber crop and a rich source of polyphenol compounds and acylated anthocyanins. There is an inverse relationship between the risk of chronic human diseases and the consumption of polyphenolic rich diet. *Dioscorea alata* is a plant species with several undocumented landraces. In this study, several landraces of water yam with distinct morphological features were collected from all over Kerala. Distinct variation in morphological feature among landraces was tuber colour and only those landraces which expressed consistent morphological characters for constitutively two growing seasons were included in the study. Plants were categorized according to the L*a*b* colour attributes of tuber extracts. There were five categories, red, pink, orange, yellow and white. Total phenol, flavanoid and anthocyanin content of the tuber extracts were measured spectroscopically and correlated with antioxidant properties determined by 2,2-diphenyl-1-picryl-hydrazyl-hydrate free radical method and ferric reducing antioxidant power assay. Landraces showed statistically significant difference in all the parameters studied and strong correlation were observed between total phenol and antioxidant activity. Out of the five categories orange coloured tubers showed relatively high phenol and flavanoid content. Colour variations of tuber extracts correlated with anthocyanin quantity and polymeric nature of anthocyanins. This study helps to identify and categorize landraces of *D.alata* with potential health benefits and commercial applications. Distinct colour characteristics of tuber could be useful in the field of natural colorants. This study also aimed to document and preserve landraces of water yams for further study and research in this area.

Keywords : the antioxidant property, anthocyanins, polyphenols, water yam

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