Radical scavenging and reducing properties of extracts of cashew shoots (Anacardium occidentale)

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1. Introduction

Plants have been used for years as a source of traditional medicine to treat various diseases and conditions. Many of these medicinal plants are also excellent sources for phytochemicals, many of which contain potent antioxidant activities. The Malaysian population particularly the Malays is well-known for consuming traditional vegetables and herbs, raw or cooked as accompaniments with their main meal. These vegetables are consumed mainly for their aroma and taste as well as an appetite inducer. Many of these vegetables are claimed to possess medicinal properties although there are no scientific evidence to support this claim. One of the commonly consumed vegetables is the shoot of Anacardium occidentale. A. occidentale has been used to treat various ailments including malaria and yellow fever (Akinpelu, 2001) as well as diarrhea (Goncalves et al., 2005).

A. occidentale or cashew plant is a member of the family Anacardiaceae and is a tropical tree indigenous to Brazil. However, it is now widely grown in other tropical places particularly in India. The biological activities of this plant is widely reported and it has been shown to possess anti-viral (Goncalves et al., 2005), anti-fungal (Schmouko, Mendonça-Filho, Alviano, & Costa, 2005), anti-bacterial (Akinpelu, 2001) and anti-inflammatory activities (Mota, Thomas, & Barbosa Filho, 1985). Another study reported the ability of extracts of A. occidentale to provide protection against streptozotocin-induced diabetes in rats (Kamitchouing et al., 1998). The shoot of this plant extract was also able to inhibit copper-induced LDL oxidation (Roaeh, Salleh, Runnie, Mohamed, & Abeywardena, 2003). More recently, the leaves of A. occidentale was reported to provide vasorelaxation effect when studied using isolated rat aorta (Runnie, Salleh, Mohamed, Head, & Abeywardena, 2004).

The antioxidant activities and phenolic content of this plant have been reported but mainly in the nuts and stem barks (Kornsteiner, Wagner, & Elmadfa, 2006; Kubo, Masuoka, Ha, & Tsujimoto, 2006; Trevisan et al., 2006) and not much information is available on the shoots which are also commonly consumed. Two recent studies have reported the antioxidant activities of the leaves of this plant (Abas, Lajis, Israf, Khizirah, & Umni Kalsom, 2006; Runnie et al., 2004). In view of the limited data on the antioxidant activities and phenolic content of the shoots of A. occidentale, it was the aim of this study to attempt to provide further information on the phenolic content and antioxidant activities of this plant using several antioxidant assays. The assays consisted of estimating the ferric reducing capacity of the plant extracts and determining the scavenging effects of the plant extracts on the free radical DPPH and ABTS, nitric oxide and superoxide anion. At the same time, the phenolic content of the plant was also estimated. As phenolic compounds are abundant in plants (Naczek & Shahidi, 2006), they may potentially be present in high concentrations in the...