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PaperTitle **Antioxidant and Antimutagenic Properties of Rooibos(*Aspathalus Linearis*) Tea**

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#### ABSTRACT

Rooibos (*Aspathalus linearis*) tea is a unique beverage endemic to South Africa. In vitro antimutagenic and antioxidant activity have been demonstrated for this herbal tea. Investigation of its major monomeric flavonoid compounds showed potent antioxidant and antimutagenic properties for some. However, their low concentration in the aqueous extract does not explain the activity obtained for the whole extract. To unravel the link between composition and activity, bioactivity-guided fractionation of rooibos extract was carried out.

We fractionated a methanol extract of unfermented rooibos on XAD and Sephadex LH20 matrices using various solvent systems. Each fraction was biologically characterized by

1. □ Antioxidant activity (ABTS, TBARS, FRAP)
2. □ Antimutagenicity by the *Salmonella typhimurium* assay using the plate incorporation technique with TA98 and TA100 as the tester strains and 2-acetamidofluorene and aflatoxin B1 as mutagens, respectively.

Colorimetric assays were used to determine concentration of total polyphenols, flavanols and flavonols in the extracts while the major known polyphenols were also characterized by HPLC.

Four major fractions (B1-4) were obtained from the XAD column, which showed different levels of antioxidant activity and antimutagenicity. Fractions B2 and B3 exhibited strong antioxidant activity which consisted mainly of the dihydrochalcones, aspalathin and nothofagin, respectively. Total polyphenols, flavanols and flavonols were highest in B2, B3 and B4, and lowest in B1. Although an antimutagenic response was obtained with all fractions tested, B1 exhibited high antimutagenicity with the lowest antioxidant activity and low polyphenolic content. We concluded that the antioxidant polyphenolic compounds were not necessarily responsible for antimutagenicity in rooibos tea.