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### Flavonol acyl glucosides from the aril of *Schotia brachypetala* Sond. and their antioxidant, antibacterial and antimalarial activities

Jan H van der Westhuizen  
University of the Free State, South Africa

*Schotia brachypetala* Sond. (Fabaceae) is a Southern African tree. It is used to treat dysentery, diarrhoea, heart burn, nervous conditions, acne and influenza by traditional healers. We previously reported antioxidant, antibacterial and antimalarial activities from the crude methanol extract. High-speed countercurrent chromatography (HSCCC) was used as the primary chromatography technique to isolate pure compounds from the methanol extract. This all-liquid method avoids extensive tailing and irreversible adsorption of polyhydroxyflavonol glucosides associated with traditional solid column packing materials. We isolated two new flavonol acyl glucosides, 3-*O*-methylquercetin 7-*O*-[ $\beta$ -D-6''-(*E*-*p*-coumaroyl) glucopyranoside] and 3,4'-di-*O*-methylquercetin 7-*O*-[ $\beta$ -D-6''-(*E*-*p*-coumaroyl)glucopyranoside], four known flavonol glycosides and one known dihydroflavonol glucoside from the methanol extract of the aril part. In some cases Sephadex was used for final purification. The structures of the isolated compounds were elucidated with 1D and 2D NMR, MS and CD. Acid hydrolysis followed by thiazolidine derivatisation and GC analysis was used to establish the absolute configuration of the sugar moieties. Two pure compounds showed good antioxidant activity in the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay ( $IC_{50}$  15.2 and 19.2  $\mu$ M, respectively) similar to the positive control, quercetin ( $IC_{50}$  14.3  $\mu$ M) and two were inactive at 100  $\mu$ M. Antimalarial activity using the tritiated hypoxanthine incorporation assay against the chloroquine-resistant FCR-3 strain of *Plasmodium falciparum* was noted for two compounds ( $IC_{50}$  5.18 and 7.81  $\mu$ g/mL, respectively) with lower  $IC_{50}$  values than in the crude methanol extract (18.95  $\mu$ g/mL). Moderate to weak activities were found against four reference bacterial pathogens (*Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus* and *Enterococcus faecalis*).

#### Biography

Jan H van der Westhuizen received his PhD from the University of the Free State. He was a Postdoctoral Research Assistant at the Imperial College, London and spent a sabbatical at Cambridge University. His research group, in collaboration with PAREXEL, received the NSTF Award for Innovation, for the synthesis of internal standards and the development of novel bioanalytical methods. His current research includes the chemistry and composition of flavonoids and commercial proanthocyanidin extracts, the discovery of novel bioactive molecules from African plants (guided by indigenous knowledge) and their potential for new drugs. He collaborates in two multidisciplinary EU-funded Seventh Framework programmes.

vdwestjh@ufs.ac.za