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Author

Cock, Ian

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Phytochemical analysis of *Tasmannia lanceolata* extracts that inhibit the microbial triggers of rheumatoid arthritis

I.E. Cock[a], J. Sirdaarta[a], V. Winnett[a], B. Matthews[b]
[a]*Environmental Futures Research Institute, Griffith University, Brisbane 4111, Australia*
[b]*Smartwaters Research Centre, Griffith University, Brisbane 4111, Australia*

A wide variety of herbal medicines are used in indigenous Australian traditional medicinal systems to treat rheumatoid arthritis (RA) and inflammation. *Tasmannia lanceolata* (Tasmanian pepper) has received recent attention as a potential medicine due to its high antioxidant content and antibacterial activity, yet studies into its potential in the prevention or treatment of RA are lacking. The current study was undertaken to test a panel of Tasmanian pepper extracts for the ability to block the microbial trigger of RA and to use metabolomic fingerprint analysis to detect anti-inflammatory compounds. Tasmanian pepper berry and leaf were extracted with solvents of varying polarity and investigated for the ability to inhibit the growth of the bacterial trigger of RA. The extracts were tested for toxicity in the *Artemia nauplii* bioassay. The most potent inhibitor of *Proteus mirabilis* growth was further analysed by RP-HPLC coupled to high accuracy TOF mass spectroscopy. The Tasmanian pepper berry extracts were determined to be the most effective inhibitors of *P. mirabilis* growth, with MIC values as low as 11 and 126 μg/ml for the methanolic and aqueous extracts respectively. Subsequent analysis of the *T. lanceolata* fruit extracts by RP-HPLC coupled to high resolution TOF mass spectroscopy detected the resveratrol glycoside piceid and 2 combretastatin stilbenes (combretastatin AQ1 and combretastatin A4) in both *T. lanceolata* fruit extracts. All extracts were also shown to be non-toxic in the *A. nauplii* bioassay. The low toxicity of these extracts and their inhibitory bioactivity against *Proteus* spp. indicate their potential in blocking the onset of rheumatoid arthritis.

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