

Green solutions for skin-ageing

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Abstract

South African plants were selected for investigation on the basis of their traditional uses for skin disorders. South Africa has a wealthy supply of plants (about 23 500 species of higher plants) together with a high degree of endemism (36.6%) in the indigenous South African flora, of which 4000 plant taxa are ethnomedicinally used and approximately 500 species are used in traditional medicine by an estimated 70% South Africans on a regular basis. The country has huge potential in identifying novel compounds to treat many diseases. South African plants for various purposes such as infectious diseases, cancer, skin-hyperpigmentation problems, melasma, periodontal diseases, and for ACNE problem have been scientifically investigated. Steady progress in evaluating potential medicinal plants for product development with potential in human medicine has been made. Ethanolic and fermented extracts were prepared and their anti-ageing potential was evaluated by means of elastase inhibition. The results showed significant elastase-inhibition for three samples compared to the positive control, ursolic acid, a known inhibitor, with the ability of the extracts to inhibit 50% of the enzyme (IC₅₀) at concentrations of 79.09 µg/ml, 83.92 µg/ml, and 50.59 µg/ml for the ethanolic samples of *Annona senegalensis* (leaves) (ASL), *Annona senegalensis* (bark and twigs) (ASB), and *Persicaria senegalensis* (PS) respectively. All three samples were then evaluated for their in vitro cytotoxic potential against the human keratinocyte cell line, and were found to exhibit no cytotoxicity at the highest concentration tested (400 µg/ml). Further studies then investigated the anti-inflammatory propensity of the extracts by measuring their ability to inhibit a crucial enzyme involved in the inflammatory process, cyclooxygenase-ii. The results indicated the best inhibition of this enzyme to be for PS, with an IC₅₀ of 2.27 µg/ml, followed closely by ASL (3.51 µg/ml) and ASB (5.02 µg/ml). Superoxide has been identified as one of three main free radicals implicated in the activation of the ageing pathway, and as such the scavenging capacity of these extracts was also evaluated. The results again revealed the best activity by PS (27.22 µg/ml), followed then by ASB (43.29 µg/ml) and ASL 70.38 µg/ml).

Biography

Prof. Namrita Lall has completed her Ph.D from the University of Pretoria and was a visiting scientist at the University of Illinois, Chicago and Kings College London. She has published more than 120 papers in reputed journals. She is also the co-inventor of 16 national and international patents. This medicinal plant scientist at the University of Pretoria is ranked in the top 1% of the global Essential Science Indicators list of influential academics who write about pharmacology and toxicology. In 2014, she received the Order of Mapungubwe - South Africa's highest honour - from President Jacob Zuma, in recognition of her research.

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