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## South African medicinal plants with dermatological relevance

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. South Africa 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. Hypopigmentation is a common problem in the Western world and there are many people – especially Caucasian skin types – with skin problems such as vitiligo, leukoderma and progressive macular hypomelanosis. There are a few treatments available for hypopigmentation disorders, but most of those are only temporary – when treatment is ceased the spots re-appear – some of them can even be harmful in the long run, such as the case with UV combined treatments. Progressive macular hypomelanosis is also a hypopigmentation disease. Progressive macular hypomelanosis differs from the other hypopigmented diseases, as it is caused by bacteria. Previous studies conducted by Relyveld *et.al.* showed that the causative bacteria belongs to the *Propionibacterium acnes* species, the same bacteria which causes acne, but it is a different strain, still unidentified. Although it is the same species which causes both acne and progressive macular hypomelanosis it is not necessary that if one has acne, the same person can have the hypopigmented spots or vice versa. The aim of the present study was to find an alternative treatment for progressive macular hypomelanosis, through investigating plants that could inhibit bacterial growth of *P. acnes* and induce melanin production in melanocytes (*in vitro*). The antibacterial studies also determined whether the plants were bactericidal or bacteriostatic. Combinations of different plants or the synergy between plants and known drugs were tested to find the most potent solution. Ten plants were chosen for this study, a few indigenous to South Africa. The results indicated that only one of the ten plants did not show antibacterial activity against *P. acnes* reference strains ATCC 6919 and ATCC 11827. The *Ficus* species showed 50 % inhibition of the bacteria's growth at a concentration of 500 µg per mL, while the *Pelargonium* sp. showed 50% inhibition of the bacteria's growth at a concentration of 250 µg per mL. The *Hypericum* sp. and *Withania* sp. showed to be the most active, resulting in 50 % inhibition of the bacteria's growth at concentrations lower than 70 µg/mL. The aforementioned concentrations needed for bacterial inhibition decreased when combined with known drugs. The cytotoxicity of all the plants were also determined to ensure that the active concentrations against the bacteria are lower than the toxic concentrations of the plant extracts.

## Biography

Namrita Lall has completed her PhD 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 100 papers in peer reviewed journals. She is also the Co-Inventor of 14 national and international patents. In 2014, she received the Order of Mapungubwe: South Africa's highest honour from Honourable South African President, Jacob Zuma, in recognition of her research. The highlight of her academic career has been her nomination for a National Research Chair in Plant Health products from IKS, which was awarded by the NRF/DST in 2016, which is her current position at the University of Pretoria, South Africa.

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