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Phytochemistry and cosmetic potential of some medicinal plants in the beauty and healthcare industry of South Africa

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The prolonged exposure of the skin to sun radiation can have undesired consequences, resulting in skin damage and darkening. Plant extracts that can offer protection to the skin are important in skin rehabilitation. Therefore, the aim of the study was to test plant extracts for their phytochemical potential and cosmetic potential. Extracts of 15 medicinal plants from the Eastern Cape Province, South Africa used for beauty and healthcare were evaluated for their total phenolic content, flavonoid content, anti-tyrosinase activity and absorption of ultraviolet-visible (UV-Vis) light, used to calculate their sun protection factor (SPF). Methanolic extracts from *Ruta graveolens* L., *Aloe ferox* Mill., *Ilex mitis* (L.) Radlk., *Cassipourea flanaganii* (Schinz) Alston and *Rorippa nasturtium* (L.) Hayek had higher total phenolic content of 29.98 (0.40), 37.88 (0.19), 44.15 (0.14), 49.45 (0.21) and 53.86 (0.18) mg GAE/g, respectively. The flavonoid content was highest for *Plantago lanceolata* L. at 5.06 (0.14) mg CE/g. The percentage inhibition of the tyrosinase enzyme ranged between 29-74% for all tested plant extracts. The photo protective effect of the plant extracts was exhibited by *C. flanaganii*, *I. mitis*, *Arctotis arctotoides* (L.f.) O. Hoffm and *P. lanceolata* with SPF values above 15. A number of the tested plant extracts showed good potential for use in cosmetics and their combined use can enhance their activity.

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Renovating drug discovery from traditional medicine: Let history tell the future

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History has always provided vital information leads in shaping the future and the field of drug discovery makes no exception. History of traditional medicines shows that historical experiences of these medicines have more implications for drug discovery than just providing new chemical entities. Historically, ethnobotanical leads have resulted in three different types of drug discovery: (1) Unmodified natural plant products where ethnomedical use suggested clinical efficacy (like digitaline) (2) unmodified natural products of which the therapeutic efficacy was only remotely suggested by indigenous plant use (like vincristine) and (3) modified natural or synthetic substances based on a natural product used in folk medicine (like aspirin). History has also made us to learn the concept of polyherbal formulation and synergism, which now is one of the major thrust areas. This has resulted in an effective modern approach of finding new chemical entities by effective combination of existing agents than looking for totally new entities. The fact that traditional medicine has been in use for ages with positive effects, makes the drug discovery process from the selected plant a sure success affair. The sciences of ethnobotany and ethnomedicine are developing rapidly due to the recent improvements in screening techniques, including *in vitro* bioassays. With the development of more selective *in vitro* assays, the quantities of plant material that need to be collected and stored has dropped from 5-10 kg to 50-500 g. This obviously has important ecological implications. In addition, conservation trends have been extended to the collection of different plant parts, with greater emphasis placed on sustainable harvest, like bark is not collected if this would endanger the survival of the tree, and limited amounts of root systems are harvested. The evaluation and authentication of traditional remedies can contribute towards the formulation of an integrated health care system combining both local and Western practices. This involves the documentation and testing of the efficacy and toxicity of medicinal plant extracts, and the identification of the active principles. This would enable local knowledge of medicinal plants to be compiled and conserved, and recommendations for usage to be based on an empirical understanding of the activity and toxicity. For many years, assay results from numerous publications describing novel natural products and biologically active principles have formed the basis for pharmacognostical research. With application of emerging techniques and integration of informatics, entirely novel possibilities for rational selection, prediction and interpretation are within grasp. Therefore, history of traditional medicine with proper scientific exploitation can effectively renovate the drying drug discovery pipeline, so we should go back to history to recharge the future.

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