

stored ones. With the exception of *A. oppositifolia* and *P. longifolia*, a significantly higher radical scavenging activity was observed in the stored compared to fresh materials. There was no significant difference in the antioxidant activity based on the β -carotene-linoleic acid model between the stored and fresh materials. Extract obtained from freshly harvested *A. oppositifolia* showed a mutagenic effect at 5 mg/ml against *Salmonella typhimurium* TA 1535 strain whereas no such effect was recorded in the stored material. There was no mutagenic effect detected in both the stored and fresh materials of other plant species. The results suggest that stored plant materials can still be biologically potent and possibly safe to use after prolonged storage. However, it would be prudent to study each plant individually, particularly those that may contain poisonous compounds.

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Critical discerning characters of *Solanum* Linn species (Solanaceae)

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The genus *Solanum* is difficult and complex taxonomically due to the gross morphological variability between and within species as a result of human interference and other factors. This study investigated some species in the genus *Solanum* with a view to resolving some of these conflicting taxonomic issues, using numerical evaluation with a greater advantage of combination of sixty-two (62) characters which are representatives of both morphological (vegetative and floral) and anatomical characters of the species of *Solanum* and observations were made on ten species of *Solanum*. Principal Component Analysis (PCA) and Single Linkage Cluster Analysis (SLCA) were employed to elucidate the relationship among the taxa. The resulting dendrogram showed the grouping of the taxa into two major clusters. Our results showed clear separation of *S. nigrum* and *S. americanum*. Principal Component Analysis factor loading of the characters showed that characters such as leaf base, stomata type, trichome type, guard cell area on adaxial surface and crystal type were important in delimiting the taxa studied. It was concluded that *S. americanum* and *S. nigrum* which were considered synonyms were distinct species while *S. anomalum* was closely related to the section of *Oliganthes* and distant to *Torva* where it was classified.

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Promotion of aromatic orchids endemic to the Mascarene Islands within a framework of sustainable development

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Jumellea fragrans and *Jumellea rossii*, both named "Faham", are two epiphytic orchids endemic to the Mascarene Islands (Reunion, Mauritius) widely used for their aromatic and medicinal properties. Cultivation of these orchids is currently non-existent, so gathering and poaching in natural populations provide the supply. Continued use of this resource and the reduction of its natural habitat now result in a drastic decline of its natural populations. In order to prevent the decline of these taxa, to preserve its natural evolution in the wild, and to answer to the local consumers demand, we initiate a multi-disciplinary project. The main aim of the so-called "ORCHIFAH" project is to provide the scientific background requisite for the production of Faham at an industrial level. An ecological approach is set to characterise the environmental conditions (light, temperature, watering) for an optimal biomass production. *In vitro* conditions of asymbiotic germination are currently determined. The biochemical components variation of populations of the two species are analysed by RMN spectrometry. The development of an appropriated extractive mode of volatile compounds is planned. All this information will help us to accurately characterise the biology of Faham and the conditions of its production, essential prerequisites for the development of an agricultural production chain. The results will also allow us to determine the conservation status of the species and recommendations for the management of wild populations. The poster will explicit the different steps of the implementation of an agricultural production chain. The first results in each field will be presented.

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Plant diversity, morphology and physiology on the seasonally snow abundant niches of the Drakensberg Alpine Centre, Lesotho

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Mountains are one of the most important and yet environmentally sensitive habitats in the world, they act as reservoirs of species, and have frequently served as refugia for organisms during periods of climate change and provided subsequent sources for speciation. As temperatures increase due to global climate change, species are shifting to higher altitudes to escape the effects of warming at lower altitudes. The aim of this study is to investigate the environmental conditions of alpine species which survive in seasonally snow-covered areas along high altitude south-facing sites at the base of rock scarps. This study was undertaken near Kotisephola Pass in the Drakensberg at ca. 3300 m.a.s.l. The study site portrays botanical micro-zonation below a rock scarp, which is a likely function of long-lasting snow banks in deeply shaded areas lasting for ~six months. The snow melts faster with increasing distance from the scarp face. Three zones were identified; these reflect variations in vegetation and are characterised by distinct *Helichrysum* species. Temperature, solar radiation, snow longevity/depth and soil moisture were measured using Hobo and Tinytag data loggers in all three zones to monitor changes over the five winter months when the plants are covered by various depths of snow. In addition, air temperature and humidity were measured at hourly intervals on plant canopies and stems using iButton temperature loggers in the three zones. Temperature variation across the zones was recorded during both snow accumulation and gradual snow melt through the five months and demonstrates contrasting environmental conditions associated