Human Disturbance of Blister Bush in Platteklip Gorge, Table Mountain

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Blister Bush produces phytophototoxins, which can cause severe burns on human skin. It is thought that Blister Bush grows more abundantly where there is significant human disturbance, possibly due to fertilization by human urination. Disturbance may also increase its phytotoxin production. The aim of this study is to assess the distribution of Blister Bush in Platteklip Gorge on Table Mountain in relation to levels of human disturbance. The effect of disturbance on the relative abundance of phytophototoxins and other secondary metabolites is also investigated. All Blister Bush were waypointed using a GPS recorder and plotted on aerial photographs. Leaf and soil samples from bushes in areas of severe and minimal human disturbance were collected. The pH levels and nitrogen content of twelve soil samples were tested as indicators of human urination. Thin Layer Chromatography was used to determine whether phytophototoxin levels differed in those found in disturbed and undisturbed areas. Liquid Chromatography Mass Spectrometry and Gas Chromatography Mass Spectrometry were then performed in order to identify these secondary metabolites. Blister Bush were found to grow more abundantly in undisturbed wet areas, where soil pH is lower and nitrogen content higher; this rejects the hypothesis that urination in frequently disturbed areas affects abundance. Furthermore, chromatography shows that phytotoxin composition does vary, and this stimulates further research. The potential use of phytophototoxins in skin cancer and melanoma treatment could lead to a medical application for the plant’s toxins.

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