



Conditions of survival of earth vegetal forms in Mars environments?

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The earth presents a variety of environments to which vegetal forms have adapted its situation in terms of UV radiation, pressure, temperature and surface atmospheric chemical composition. The repeated unsuccessful attempts to detect chlorophyll seems to exclude any vegetal presence on Mars, but the study of earth plants in extreme conditions reveal some similitude between Antarctica and the less hostile Martian conditions.

In particular, one of the two known Antarctic vascular plants, *Deschampia Antarctica* has developed a spectacular freezing resistance together with a built-in UV resistance due to absorbing flavonoids that it shares with other high altitude and desert plants. The resistance of this plant and other vegetal forms will be compared with the actual environmental conditions on Mars as measured by the recent space missions and especially the Mars-Express orbiter. The seeds of *Deschampia Antarctica* in particular appear to be very resistant and to allow a long latency period.

Most existing works on possible Martian vegetal forms involve simpler species as algae and lichens which are unfortunately more sensitive to UV than Antarctic vascular plants; the possibility of screening them by a thin Martian dust layer will be discussed as well as subsurface survival.

It is also proposed that, when the planetary protection treaties will allow it, a minimal greenhouse be established on Mars to study germination and growth of resistant species in order to observe if the soil-atmosphere system of Mars can be modified by a biological process.