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UV illumination on *Crithmum maritimum* *in vitro* cell culture: A biomimetic approach

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Halophyte plants represent a small part of the biodiversity. These plants, growing on the seashore, are submitted to high stresses, such as oxidative stress from the UV and osmotic stress due to the high salinity of their environment. Therefore, these plants have developed a wide range of chemical responses to fight against these stresses, highly valuable because of their potential biological activities. On the other hand, plant cell culture is a good method for producing bioactive compounds. Nevertheless, plant cell cultures often produces less secondary metabolites compared to wild plant. Recreate *in vitro* the environment of the wild plant, such as increasing UV stress should permit to produce higher yield of bioactive compounds and even activate new metabolic pathways, ensuring to obtain a brand new phytochemical profile. Taking into account these two parameters, cell culture of halophyte plants can be very interesting for the cosmetic industry.

Crithmum maritimum is a halophyte plant from Brittany seashore, which has been commonly used in cosmetic. Cell culture from *Crithmum maritimum* has been established by dedifferentiation of leaf explants. These cells have been cultivated in solid and liquid medium. This first experiment was conducted under white light with no photoperiod. A second experiment was conducted under UV illumination, with a replicate under white light. Growth curves, phytochemical fingerprint and phenolic profile were established for both culture conditions in order to see the UV influence. We found that the UV illumination had a negative effect on the growth of the cells, but also induced an over-production of the phenolic compounds. Half-dozen molecules have been detected and a flavonoid that was not produced in the cells under white light has also been detected in UV condition.

This study proves the effectiveness of UV illumination in order to over-produce phenolic compounds in *Crithmum maritimum* dedifferentiated cells.

Biography

Julien Fouilland is Project Manager at Plant Cell Culture, his line of research is Plant Cell Culture.

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