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**Domestication Study of *Senecio nutans* Sch.Bip. (Asteraceae): its
Economic Potential and Sustainable Management**

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DOMESTICATION STUDY OF *SENECIO NUTANS* SCH.BIP. (ASTERACEAE): ITS ECONOMIC POTENTIAL AND SUSTAINABLE MANAGEMENT

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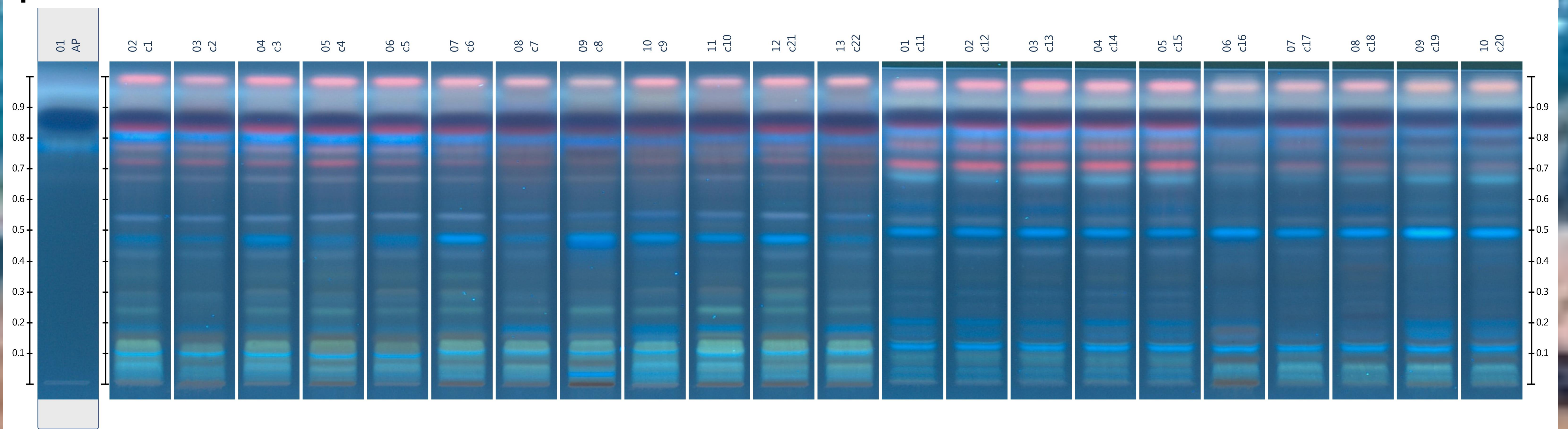
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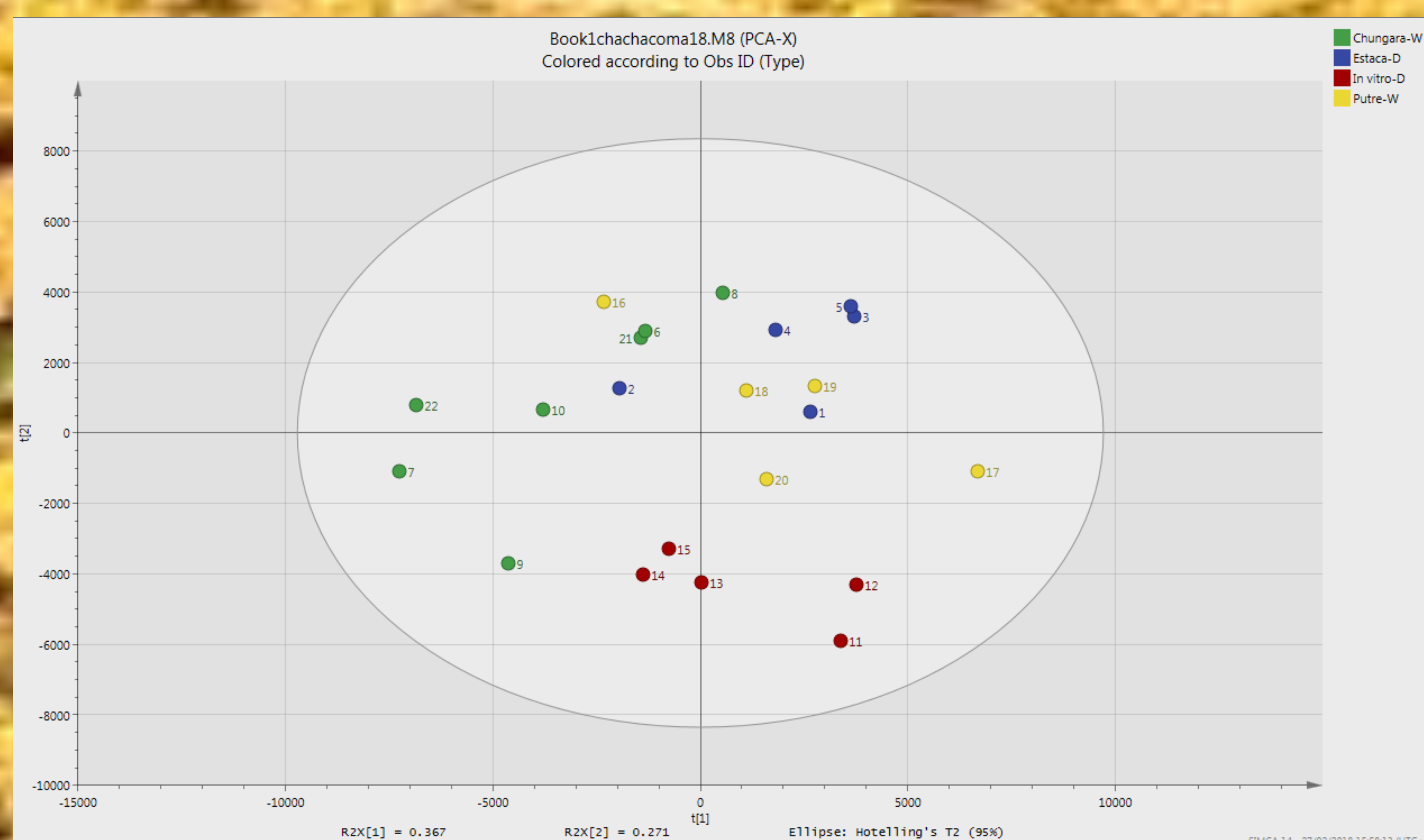


Chachacoma, *Senecio nutans* Sch.Bip. (Asteraceae), is a herbal remedy used traditionally in Chile to prevent altitude sickness. The main compound identified is acetophenone (1-[4-hydroxy-3-(3-methylbut-2-enyl)phenyl]ethanone), which has been found to have vasodilator effects, as reported for other plants that may affect oxygen uptake and distribution (e.g. *Rhodiola rosea*). Consequently, it has acquired a reputation to be used as a sports supplement and has been used as a value-adding ingredient for new innovative health products.



Chachacoma mainly grows in the wild between 3,200-5,000 metres and has been collected by the Aymara minority group as a cash crop, overexploiting this native natural resource. The interinstitutional research collaboration between CIHDE, Chile and UCL, UK, has established an evidence base for its characterization, plausibility of action and optimization of the main ingredient, acetophenone, through *in vitro* tissue culture.

Methods: We analyzed samples of Chachacoma cultivated and collected at different altitudes by NMR spectroscopy and HPTLC to assess the levels of acetophenone and establish fingerprints for the other metabolites extracted.



Results: Acetophenone content appears to vary at different altitudes and growing conditions, the best collected samples, with relation to acetophenone content, grew in the wild, above 4500 meters, at Chungara lake. Similar levels of acetophenone and metabolite fingerprint were obtained using *in vitro* tissue culture as the starting material.

Conclusions: Tissue culture cultivation may be a way to expand and develop the Chachacoma industry for the benefit of the Aymara and other minority groups living in the high Andes, and at the same time help to ensure its sustainability for future generations.



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