**CELLULAR AND EXTRACELLULAR PHYTOHORMONES OF ISOLATED LICHEN SYMBIONTS: A POTENTIAL SOURCE FOR INTER-KINGDOM SIGNALLING**

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Phytohormones are important compounds in higher plants with versatile physiological roles. Cellular phytohormones are well studied in higher plants and recent studies have shown that extracellularly released phytohormones are involved in chemical crosstalk between higher plants and microbes. However, hardly any knowledge is available about cellular concentrations and extracellular release of phytohormones in lichen symbionts. Here, we studied cellular phytohormones and their extracellular release in the isolated symbionts of three lichens, including the mycobionts, *Cladonia grayi*, *Xanthoria parietina* and *Tephromela atra,* and their compatible photobionts, *Asterochloris glomerata*, *Trebouxia decolorans* and *Trebouxia* sp.,respectively. For both groups, we investigated a) which phytohormones are produced and b) if they are released extracellularly. Myco- and photobionts were grown on solid media and phytohormones were identified by ultra-high-performance liquid chromatography coupled with tandem mass spectrometry (UHPLC-MS/MS). In mycobionts, we found indole-3-acetic acid (IAA), abscisic acid (ABA), salicylic acid (SA), and jasmonic acid (JA) in cells and except for ABA, these phytohormones were also extracellularly detectable in the media. Phytohormones were also detected in photobionts, showing cellular occurrence of IAA, indole-3-butyric acid (IBA), ABA and zeatin (ZT). Furthermore, IAA, IBA, ABA, JA and gibberellin A3 (GA3) were found to be released extracellularly. IAA represented the most abundant phytohormone produced within cells and released extracellularly, making it a promising candidate for further studies into inter-kingdom signalling. We believe that our results contribute valuable baseline information on the roles of phytohormones in chemical communication between lichen symbionts. Funding: Austrian Science Fund (FWF, P 32092 to IK and FWF, I 1951-B16 to AH), University of Innsbruck (PhD stipends “Doktoratsstipendium NEU aus der Nachwuchsförderung 2017“ and “Forschungsstipendium an österreichische Graduierte” to GP).