**LASER MICRODISSECTION FOR LOCALIZATION OF SPECIALIZED METABOLITES: APPLICATION IN LICHEN-SNAIL INTERACTIONS.**

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In Subantarctic islands, lichens are widespread and were eaten by the only native Gastropod of Possession island (Crozet Archipelago), *Notodiscus hookeri*. Aslichens are slow-growing symbiotic organisms they must defend strongly against grazing and we suppose that specialized metabolites fulfill this role. In the objective of correlating sectorial damage observed after grazing and chemical composition, laser microdissection and liquid chromatography (LC-DAD-MS (ESI-)) were combined to map the location of secondary metabolites in tissue sections. This technique has been successfully applied to the cortex and to the medulla of the foliate lichen, *Pseudocyphellaria crocata*. Subsequently, main secondary metabolites belonging to three families of specialized metabolites, depsides (tenuiorin and derivatives), depsidones (stictic acid and derivatives) and pulvinic acid derivatives (calycin), were qualified and quantified in dissected samples by LC-DAD-MS. Their biological functions were correlated to their distribution patterns in the lichen after no-choice experiments carried on lichens and on isolated lichens metabolites. In *P. crocata*, depsides (tenuiorin derivatives) and depsidones (stictic acid derivatives) were accumulated in the medulla. These metabolites were deterrent for the snails, which eat preferentially the cortex with few secondary metabolites.