
Non vascular plant allelochemical interactions in terrestrial ecosystems under environmental changes: scientific challenges

Geneviève Chiapusio^{*†1}, Stéven Criquet², and Philippe Binet

¹UMR 6249 - Laboratoire Chrono-environnement (UMR 6249 - Laboratoire Chrono-environnement) – Université de Franche-Comté – Pôle Universitaire BP 71427 25211 Montbéliard cedex, France

²Institut méditerranéen de biodiversité et d'écologie marine et continentale (IMBE) – Université d'Avignon et des Pays de Vaucluse, Institut de recherche pour le développement [IRD] : UMR237, Aix Marseille Université, CNRS : UMR7263 – Aix Marseille Université, Campus Etoile, Faculté St-Jérôme Service 441 Av. Escadrille Normandie-Niémen 13397 MARSEILLE CEDEX 20, France

Abstract

The study of structural and functional characteristics of plant secondary metabolites (PSMs) is a particularly valuable scientific research in relation to recent environmental changes, including those with changing climate or pollutants. The response of plants to ecological changes influences higher plant resource allocation and also PSMs. The accumulation of PSMs in vascular plant tissues is then considered as a common adaptive response of plant to adverse environmental conditions. However, although diverse and complex secondary metabolites produced in the plant kingdom are found in vascular plants, our knowledge of secondary metabolites in ancient terrestrial non-vascular plants is extremely limited. Among them, the Bryophytes or mosses represent an important branch of the plant kingdom with more than 16 000 species playing a fundamental ecological role in many terrestrial ecosystems.

Here we proposed to give a synthesis of chemical interactions of Bryophytes under environmental changes by focusing on some case study under controlled and *in situ* experiments. As example, living *Sphagnum* secondary metabolites involved in a peatland plant–soil feedback under environmental changes will be presented. Understanding how environmental changes interact to shape non-vascular plant secondary metabolisms remains an important challenge for chemical ecologists, especially where bryophytes are dominant community members.

Keywords: Bryophytes, Climate changes, Ericoid mycorrhizae, Plant Secondary Metabolites, Polyphenols, Phenoloxidases, Sphagnum

*Speaker

†Corresponding author: genevieve.chiapusio@univ-fcomte.fr