



HAL
open science

Interspecific variation in leaf litter tannins: consequences for soil processes?

Sylvain Coq, Sylvie Rapior, Françoise Fons, Annick Gargadenec, Stephan Hattenschwiler

► **To cite this version:**

Sylvain Coq, Sylvie Rapior, Françoise Fons, Annick Gargadenec, Stephan Hattenschwiler. Interspecific variation in leaf litter tannins: consequences for soil processes?. International Conference Rhizosphere 2, Aug 2007, Montpellier, France. . <hal-04876450>

HAL Id: hal-04876450

<https://hal.science/hal-04876450v1>

Submitted on 9 Jan 2025

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/255180689>

Interspecific variation in leaf litter tannins: consequences for soil processes?

Conference Paper · August 2007

CITATIONS
0

READS
146

5 authors, including:



Sylvie Rapior

Université de Montpellier

554 PUBLICATIONS 5,947 CITATIONS

SEE PROFILE



Françoise Fons

Université de Montpellier

205 PUBLICATIONS 1,165 CITATIONS

SEE PROFILE



Annick Gargadennec

Université de Montpellier

46 PUBLICATIONS 742 CITATIONS

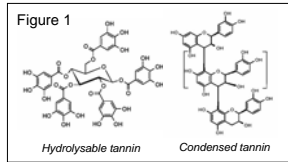
SEE PROFILE

Coq S.
Rapier S.
Fons F.
Gargadennec A.
Hättenschwiler S.
coq@cefe.cnrs.fr



Interspecific variation in leaf litter tannins: consequences for soil processes?

INTRODUCTION



- Tannins are a widely distributed group of plant **polyphenols** divided into condensed tannins and hydrolysable tannins (Fig.1), characterized by the ability to **complex proteins**.
- Tannins entering the **soil** within plant litter play a major role during **decomposition and nutrient cycling** (Hättenschwiler *et al.*, 2000).
- Tannins may contribute to interactive effects among leaf litter species during decomposition of **plurispecific mixes** (Hättenschwiler *et al.*, 2005).

MATERIAL AND METHODS

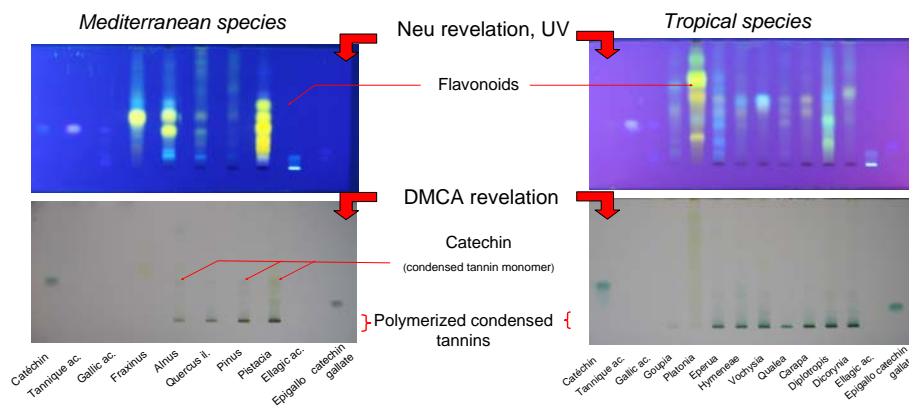
- Analysis of leaf litter tannins from **mediterranean** and **tropical** (French Guiana) tree species (table).
- Thin layer **chromatography**, with hydrolysable tannins (ellagic acid, gallic acid, tannic acid) and condensed tannins (catechin, epigallocatechin gallate) as chemical markers.
- Condensed tannin (CT) concentrations by **spectroscopy** with DMCA¹ as reagent.

¹: dimethylaminocinnamaldehyde

Species	Family
<i>Fraxinus angustifolia</i> Vahl.	Oleaceae
<i>Alnus glutinosa</i> (L.) Gaertn.	Betulaceae
<i>Quercus ilex</i> L.	Fagaceae
<i>Pinus pinea</i> L.	Pinaceae
<i>Pistacia terebinthus</i> L.	Anacardiaceae
<i>Gouppia glabra</i> Aubl.	Celastraceae
<i>Platonia insignis</i> Mart.	Chusciaceae
<i>Eperua falcata</i> Aubl.	Caesalpinaceae
<i>Hymenaea courbaril</i> L.	Fabaceae
<i>Vochysia tomentosa</i> Candolle	Vochysiaceae
<i>Qualea rosea</i> Aubl.	Vochysiaceae
<i>Carapa procera</i> DC	Meliaceae
<i>Dipterocarpus purpurea</i> Amsh.	Fabaceae
<i>Dicorynia guianensis</i> Amsh.	Caesalpinaceae

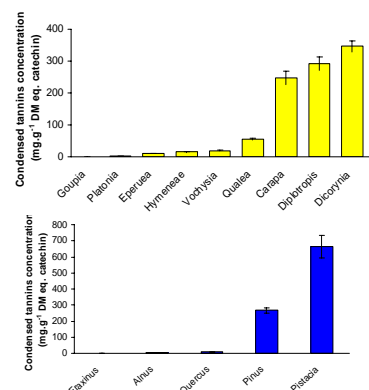
RESULTS

Thin Layer Chromatography : A large diversity in secondary metabolite profile



Spectroscopy

- Large **variation in tannin concentrations**, mainly consistent with the TLC results.
- Spectroscopic measurements with a **single standard** compound (i.e., catechin) should be interpreted cautiously. (i.e., *Pistacia* litter tannin concentration of 663 mg.g⁻¹ DM eq. catechin). Colorimetric reagents do not react in a similar way to the **diverse tannins**, specific to a plant species, and with the monomer catechin.



PERSPECTIVES

- Spectroscopic measurements with **various phenolic standard compounds**.
- **Link polyphenolic profiles** and **tannin concentrations** to **decomposition** data and particularly **litter species interactions** during plurispecific litter mixes decomposition.
- These **results help designing experiments** for a better understanding of the role of tannins in the **decomposition of litter mixes**.

Hagerman A.E. 1998, 2002. *Tannin Handbook*. <http://www.users.muohio.edu/hagermae/tannin.pdf>
Hättenschwiler S. and Vitousek P.M., 2000. The role of polyphenols in terrestrial ecosystem nutrient cycling. *TREE* 15 (6), 238-243.
Hättenschwiler S., Tiunov AV, Scheu S, 2005. Biodiversity and litter decomposition in terrestrial ecosystems. *AREES*, 36, 191-218.

