

Keshika Mahadeo<sup>a</sup>, Isabelle Grondin<sup>a</sup>, Hippolyte Kodja<sup>b</sup>, Joyce Soulange Govinden<sup>c</sup>, Sabina Jhaumeer Lalloo<sup>d</sup>, Gaëtan Herbet<sup>e</sup>, Michel Frederich<sup>f</sup>, Anne Gauvin-Bialecki<sup>a</sup>.

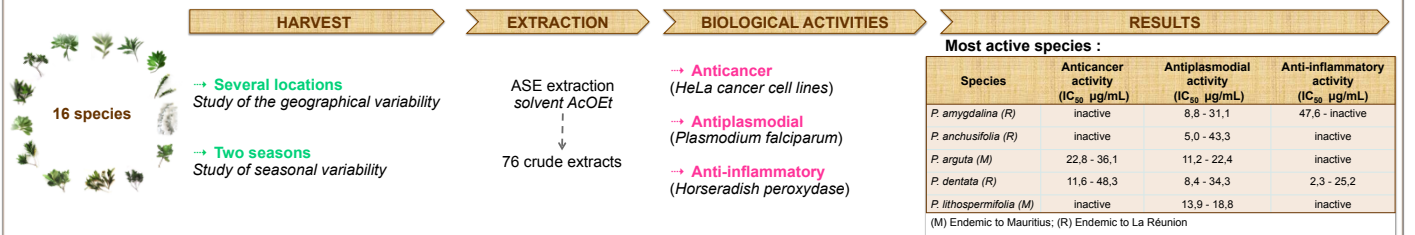
<sup>a</sup> Laboratoire de Chimie des Substances Naturelles et des Sciences des Aliments, Faculté des Sciences et Technologies, Université de la Réunion, 15 Avenue René Cassin, BP 7151, St Denis Messag Cedex 9, La Réunion 97 715, France.  
<sup>b</sup> UMR Qualisud, Université de La Réunion, BP 7151, 15 avenue René Cassin, 97744 Saint-Denis Cedex 09, La Réunion, France.  
<sup>c</sup> Department of Agriculture and Food Science, Faculty of Agriculture, The University of Mauritius, Mauritius.  
<sup>d</sup> Department of Chemistry, Faculty of Science, The University of Mauritius, Mauritius.  
<sup>e</sup> Université de Liège, Département de Pharmacie, Centre Interfacultaire de Recherche sur le Médicament (CIRM), Laboratoire de Pharmacognosie, Campus du Sart-Tilman, Quartier hôpital, Avenue Hippocrate, 15 B36 4000 Liège, Belgium.  
<sup>f</sup> Spectropôle – Aix-Marseille Université, Campus Scientifique de Saint Jérôme, Boite 511, 13397 Marseille cedex 20, France

## I. Introduction

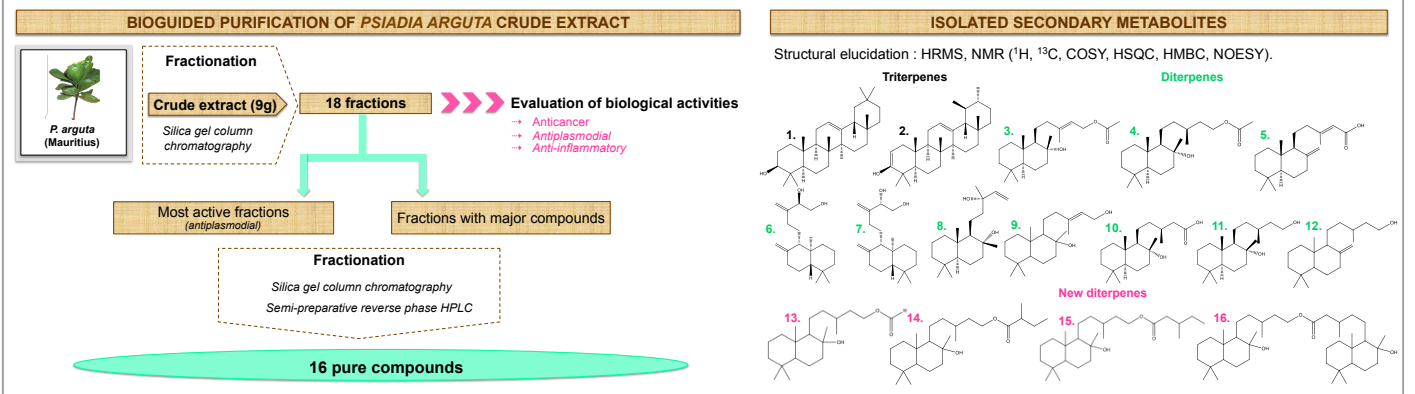
The genus *Psiadia* Jacq. Ex. Willd. belongs to the Asteraceae family and includes more than 60 species, which are well represented in Madagascar and the Mascarene Islands (La Réunion, Mauritius and Rodrigues) (Bossier *et al.*, 1993). Several *Psiadia* species have been used traditionally to treat various ailments such as expectorant for treatment of bronchitis and asthma, colds and abdominal pains (Sussman, 1980). According to literature, only a few species of the genus *Psiadia* have been studied for their chemical composition and pharmacological potential. However, preliminary screenings have displayed for example the antiplasmodial, anticancer and anti-inflammatory potentials of *P. arguta* (endemic to Mauritius) and *P. dentata* (endemic to La Réunion) (Jonville *et al.*, 2008, 2010). In order to make a comprehensive study of the genus *Psiadia* in the Mascarene Islands and to provide scientific basis for future research, a biological screening has been carried out for 11 species from La Réunion and 5 species from Mauritius. The anticancer, antiplasmodial and anti-inflammatory activities of all plant extracts have been investigated. The active compounds of *P. arguta* crude extract have been purified by activity-guided isolations. The production of these compounds through the growth of the plant have also been studied by a metabolomic approach.

## II. Biological activities of species of the genus *Psiadia*

The aim of this biological screening is to identify the most active species for anticancer, antiplasmodial and anti-inflammatory activities. Plants have been harvested from different locations and through two seasons (summer and winter) with the goal of analysing the geographical and seasonal variabilities of the chemical composition and thus, the biological activities.



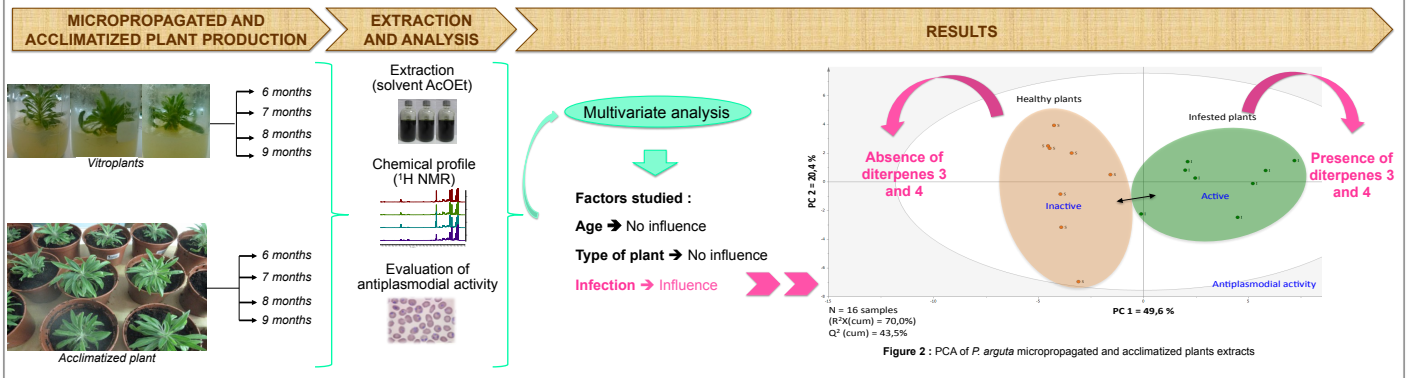
## III. Phytochemical investigation of *Psiadia arguta*



## IV. Factors influencing the production of bioactives compounds in *P. arguta* young plants

In order to identify factors influencing the production of bioactives compounds, *P. arguta* have been multiplied using *in vitro* culture techniques and micropropagated plants were acclimatized (some acclimatized plants have been infested by mealybugs). Micropropagated and acclimatized plants leaves were extracted with AcOEt. The metabolomic profile of each extract was analyzed by <sup>1</sup>H NMR and each crude extract was tested for antiplasmodial activity. Several multivariate analysis were performed to identify active compounds.

**Studied factors :** age (6, 7, 8 and 9 months), type of plant (micropropagated vs acclimatized) and infection of plants.



## V. Conclusion and perspectives

Five species have been identified for their promising biological activities : *P. amygdalina*, *P. anchusifolia* and *P. dentata*, endemic to La Réunion, and *P. arguta* and *P. lithospermifolia*, endemic to Mauritius. The phytochemical investigation of wild *P. arguta* plants led to isolation and characterization of 16 compounds including 4 new diterpenoids. The production of compounds 3 and 4 appeared to be induced when the young plants are stressed. These compounds might be responsible for the antiplasmodial activity of young infested plants of *P. arguta*. The evaluation of the antiplasmodial and anticancer activities of the isolated compounds is in progress in order to confirm these results.

## References

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