

Centrifugal Partition Chromatography method optimization for the isolation of antibacterial compounds from the fruits of *Pistacia lentiscus*

Raphaël Grougnet¹, Maíra Islena Tavares Botelli¹, Marilyn Lecsö-Bornet², Sergio Ortiz¹, Sylvie Michel¹, Ilias Smyrnioudis³, Nektarios Aligiannis⁴, Sabrina Boutefnouchet¹ and Marina Kritsanida^{1,*}

¹ Laboratoire de Pharmacognosie, UMR/CNRS 8038 Cibles thérapeutiques et Conception de Médicaments, Université de Paris, Faculté de Pharmacie de Paris, 4 avenue de l'Observatoire, 75006, Paris, France.

² Laboratoire de Microbiologie, EA 4065, Université de Paris, Faculté de Pharmacie de Paris, 4 avenue de l'Observatoire, 75006, Paris, France.

³ Chios Mastic Gum Growers Association, 1 K. Monomachou St., Chios, GR 82100, Greece.

⁴ Department of Pharmacognosy and Natural Products Chemistry, National and Kapodistrian University of Athens, Panepistimioupolis Zografou, 15771, Athens, Greece.

*E-mail: marina.kritsanida@parisdescartes.fr

Herbal preparations from several parts of *Pistacia lentiscus* L. (Anacardiaceae) such as resin (mastic gum), fruits, leaves, oil have been traditionally used in the Mediterranean basin for more than 2,500 years for their medicinal properties [1]. Mastic gum of this species harvested from Chios Island (Greece) contains antibacterial triterpenes (24-Z-masticadienonic acid derivatives MAD) [2] but their isolation is tedious, due to the presence of a myrcene polymer. The chemical composition of the fruits, considered as a waste of mastic production, was never extensively studied. Thus, we focused on this part of the plant as a potential source of bioactive metabolites.

In a preliminary step, small amounts of MAD and salicylic acid derivatives (SAD) isolated from a fruit extract using silica gel chromatography have strongly inhibited the growth of *Gram+* aerobic and aerotolerant bacterial strains.

Centrifugal Partition Chromatography is a fast technique with feasible scale-up, based on the partition between two immiscible liquid phases. However, because of close polarity, SAD partially co-elute with triterpenes. A solvents combination including some percent of ammonia solution was then optimized in order to provide a better retention of the salicylates and an efficient separation of all of the targeted compounds in only one run with a good yield.

These results could lead to the valorisation of fruits and of their constituents as natural preservatives for food and cosmetic industry.

Acknowledgements

We thank the European project EXANDAS (MSCA-RISE-2015, grant agreement No 691247) for financial support.

References

[1] Assessment report on *Pistacia lentiscus* L., resin (mastix). EMA/HMPC/46756/2015 Committee on Herbal Medicinal Products (HMPC).

[2] Rodriguez-Garcia A et al. *Mini-Reviews in Organic Chemistry* 2017; 14:272-279.