



Poplar-type propolis components as trapping agents to prevent the formation of Advanced Glycation End-products (AGEs)

Submitted by Séverine Boisard on Mon, 01/16/2017 - 11:12

Titre	Poplar-type propolis components as trapping agents to prevent the formation of Advanced Glycation End-products (AGEs)
Type de publication	Communication
Type	Communication par affiche dans un congrès
Année	2016
Langue	Anglais
Date du colloque	24-27/07/2016
Titre du colloque	9th Joint Natural Product Conference
Auteur	Boisard, Séverine [1], Aumond, Marie-Christine [2], Le Ray, Anne-Marie [3], Blanchard, Patricia [4], Derbré, Séverine [5], Schinkovitz, Andreas [6], Flurin, Catherine [7], Richomme, Pascal [8]
Pays	Danemark
Ville	Copenhague
Mots-clés	Advanced glycation end-products [9], laser desorption ionization (LDI) [10], propolis [11], reactive dicarbonyl species [12]

Propolis is a complex mixture used by bees to seal off hives, or use as a chemical weapon against intruders. Propolis is mainly composed of plant resins and beeswax so that its chemical composition, and consequently biological activity, varies with collection sites. Therefore propolis is generally classified as "poplar-type" in temperate zones vs "green Brazilian", "Clusia", "Macaranga" or Mediterranean-type in tropical zones [1]. The antiglycation potential of an organic poplar-type propolis sample had been already evaluated by our team. This study revealed that a DCM extract exhibited a strong anti-AGEs activity (IC50 28 µg/mL vs 90 µg/mL for the reference i.e. an EtOH extract of *Styphnolobium japonicum*) [2]. A bioassay-guided fractionation highlighted the major anti-AGEs components of this extract as pinobanksine derivatives and prenyl cafeate. The present work aims to show that the associated inhibition mechanism is directly related to their trapping ability of reactive dicarbonyl species such as methylglyoxal, an intermediate component in AGEs formation (Figure 1).

Fig. 1. The Maillard reaction - Schematic formation of AGEs.

Rapid identification of chemical markers is an important issue in propolis studies. A fast dereplication analysis of the propolis DCM extract, using a Laser Desorption Ionization (LDI) MS technique [3], allowed us to instantly identify 25 polyphenol derivatives previously identified by classical methods [2,4]. The results clearly show that LDI-MS represents a fast and powerful method to characterize propolis extracts and identify their origin.

References:

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Résumé en anglais

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