Insights into the herbicide activities of cinammon and citronnella essential oils using molecular biophysics tools.

Laurence Lins
TERRA Research Centre, Gembloux Agro BioTech, University of Liège, Belgium

ABSTRACT: Essential oils (EOs) are used in an increasingly number of sectors like medicine, cosmetics, food industry and more recently in agronomy. In agronomy, EOs are used as bio-pesticides for their insecticidal, antifungal or bactericidal effects but also as bio-herbicides. Owing to the current attraction for natural products, a better understanding of their mode of biological action for new and optimal applications is of importance. It has been shown that EOs antimicrobial activity, quite well described in the literature, is at least partly due to their interaction with the plasma membrane. They notably change the lipid composition, altering fluidity, leading to various effects which can induce cell lysis, apoptosis or necrosis. We are currently working on the development of a bioherbicide made from *Cinnamomum zeylanicum* Blume (cinnamon) and *Cymbogognon winterianus* Jowitt (citronella) EOs. We have shown that the application of the whole EOs and their major individual compounds on the leaves and cotyledons of *A. thaliana* appears to be promising: when applied on cotyledons or leaves, EOs induce damages that are as important as those observed for commercial herbicides.

Biography : Dr Laurence Lins has completed her PhD in Chemical Sciences from Free University of Brussels (Belgium) and postdoc studies from INSERM U410 in Paris (France). She is Senior Research Fellow at the belgian FNRS (Fonds National de la Recherche Scientifique) and Associate Professor at the University of Liège, Head of The Lab of Molecular Biophysics at Interfaces (LBMI). She has published more than 125 papers in renowed journals and is member of the editorial board of IJMS

Publications: 1.Interaction between the barley allelochemical compounds gramine and hordenine and artificial lipid bilayers mimicking the plant plasma membrane
2.Molecular model for the self-assembly of the cyclic lipodepsipeptide pseudodesmin A
3.Apolipoprotein L-I is the trypanosome lytic factor of human serum
4.Apolipoprotein L-1 promotes trypanosome lysis by forming pores in lysosomal membranes
5.Fusogenic properties of the C-terminal domain of the Alzheimer beta-amyloid peptide

14th International Conference onAgriculture and Plant Science, Sydney, Australia, June 22-23, 2020

Abstract Citation : Laurence Lins, Insights into the herbicide activities of cinammon and citronnella essential oils using molecular biophysics tools, AGRI SUMMIT 2020,Sydney,Australia, June 22-23, 2020,PP.0-1