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treatment of many diseases and illnesses. Modern chromatographic and spectroscopic techniques have had a tremendous impact on the analysis of herbal medicine to facilitate research as well as enhancement of safety and efficacy of commercial products. Today, with the advances in technology, and a variety of analytical solutions available to tackle different analytical problems, the challenge for researchers resides on being able to keep up with the pace of the technology advancement, understand and how to use them effectively to answer the analytical questions at hand quickly and effectively.

The goal of this presentation is to share with scientists some examples of the latest updates of analytical technologies, from chromatographic separation to mass spectrometry detection to informatics platform through application examples. Example technology mentioned include: supercritical fluid chromatography (SFC), nano-fluidic chromatography, Qtof MS, as well as the latest development on Ion Mobility (IMS) Mass Spectrometry.

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VASORELAXANT DITERPENES: FROM TRADITIONNAL MEDICINE TO NEW INHIBITORS OF VOLTAGE-DEPENDANT CALCIUM CHANNELS

J. Quetin-Leclercq

GNOS laboratory, Louvain Drug Research Institute, Université catholique de Louvain-Belgium

Croton zambezicus Muell. Arg. (Euphorbiaceae) (Syn. *C. amabilis* Muell. Arg., *C. gratissimus* Burch.) is a shrub or small tree reaching 10 m in height. The leaf decoction is used in Benin as anti-hypertensive, anti-microbial (urinary infections) and to treat fever associated with malaria. We analysed the in vitro and in vivo vasorelaxant activity of different extracts as well as their toxicity and identified in the dichloromethane extract diterpenes that inhibit the KCl-induced contraction of male Wistar rat aorta in a concentration-dependent manner. Their vasorelaxant effect was compared to a series of synthetic trachylobanes on KCl-induced contractions in order to evaluate the structure-activity relationships. The cytotoxicity of all these compounds was also evaluated on HeLa cells as some trachylobanes were shown to be cytotoxic and pro-apoptotic. Analysis of the mode of action showed that their activity is associated with the blockade of L-type voltage-operated calcium channels. These results indicate that *C. zambesicus* leaves contain vasorelaxant diterpenes which could account, at least partially, for their use to treat hypertension. Nevertheless, as some of these compounds are cytotoxic, this plant has to be used with caution and more in vivo toxicity studies are needed before this plant could be recommended in medicine.

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ISOLATION AND CHARACTERIZATION OF BIOACTIVE COMPOUNDS FROM ENDOPHYTES ASSOCIATED WITH MEDICINAL PLANTS

Mohamed Haddad

Institut de Recherche pour le Développement (IRD), UMR 152 Pharma-DEV, Faculté de Pharmacie de Toulouse, France

In the field of natural products, plants have proven their interest as a source of lead compounds in drug discovery. Nevertheless, in the context of biodiversity preservation, researchers recently focused their work on renewable sources, like micromycetes, which present the ability to modulate their metabolism depending on the substrate. Fungi are one of nature's most promising source for finding new drug candidates and antimicrobials. They have interesting potential as the new way of manufacturing biological medicines and a wide spectrum of new value added bio-based products. The use of fungal processes and products can lead to increased sustainability through more efficient use of natural resources. Particularly, plant-associated endophytic fungi, a group of poorly investigated microorganisms that colonize internal tissues of all plant species and able to produce some important pharmaceuticals as their host plants (such as the world's first billion-dollar anticancer drug paclitaxel), represent a sustainable and reproductive source of plant-associated natural products, and have undeniable application in the development of compounds in drug discovery. In this case, this would not only reduce the need to harvest slow-growing and possibly rare plants but also preserve the world's ever-diminishing biodiversity. The project led in our research group is aiming at a better understanding of the communities of medicinal plants-associated endophytes, especially their diversity and their interactions, as well as the search for new antiparasitic compounds. Medicinal plants from South America and North Africa were investigated for their culturable fungal endophytes diversity: 409 ascomycetous strains were isolated from 21 plants freshly collected. ITS rDNA was sequenced for 346 isolates: 71% of the isolates belong to the Sordariomycetes class, and 29% are Dothideomycetes. Secondary metabolome of all the strains is currently under investigation concurrently with a primary bioassay screening on *Leishmania infantum*. Our major goals are to correlate the potential bioactivity to the UHPLC-ESI-QTOF MS profiles to highlight bioactive markers, and to correlate these chemical profiles to the DNA sequences to discriminate fungal strains using both molecular dereplication techniques and chemical diversity analysis.

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TURMERIC – COULD IT BE A MULTI-TARGETED HERB FOR COLORECTAL CANCER ADJUVANT THERAPY?

Grace GL Yue^{1,2}, Hin-Fai Kwok^{1,2}, Julia KM Lee^{1,2}, Lei Jiang^{1,2}, Si Gao^{1,2}, Carmen KM Chan^{1,2}, Eric CW Wong^{1,2}, Kwok-Pui Fung^{1,2,3}, Ping-Chung Leung^{1,2}, Zhong Zuo⁴ and Clara BS Lau^{1,2}

1 Institute of Chinese Medicine;

2 State Key Laboratory of Phytochemistry and Plant Resources in West China (CUHK);

3 School of Biomedical Sciences