"Gallic Acid-Derived Polyphenols – From the Plant to the Cell under the Auspices of Bacchus"
Dr. Stéphane Quideau (Université de Bordeaux)

May 8, 2015, 2:30 p.m. – 3:30 p.m.

Gallic acid-derived polyphenols constitute a class of plant bioactive polyphenols primarily composed of ellagitannins and gallotannins, also commonly referred to as hydrolysable tannins. Ellagitannins feature galloyl units esterified to a sugar core, usually glucose, and characterized by the presence of biaryl and diaryl ether bonds between some or all of their galloyl units.[1] Among ellagitannins, there exists a subclass of structurally unique nonahydroxyterphenoyl (NHTP)-bearing *C*-glucosidic molecules featuring an open-chain glucose core and exemplified by the epimers vescalagin and castalagin. The fact that some of these C-glucosidic ellagitannins are found in wine as a result of aging of this beverage in oak-made barrels provided us with the impetus to examine their chemical reactivity and biological activity. Indeed, during aging in oak barrels, the hydroalcoholic and slightly acidic (*i.e.*, pH 3-4) wine solution enables the solid-liquid extraction of these ellagitannins. Once in the wine solution, some of these natural products such as vescalagin can capture grape-derived nucleophilic entities such as the flavanols catechin and epicatechin and the anthocyanin oenin to furnish condensation products, some of them having been postulated as active principles in Asian herbal medicines.[2] Of pharmacological importance is the fact that several of these found-in-wine ellagitannin hybrids are much more potent than etoposide (VP-16) at inhibiting*in vitro* the anti-cancer target DNA topoisomerase IIa.[2a,b] Furthermore, we recently discovered that vescalagin is capable of drastically perturbing the actin cytoskeleton by interacting selectively with the actin filaments, both *in vitro* and *in cellulo*.[3] Moreover, gallotannins, in which galloyl units and/or depsidically-linked chains of galloyl units are usually esterified to a glucopyranose core, and some of their simpler precursors exhibit some interesting properties with possible applications as antifibrillogenic agents. The various biophysico-chemical properties we unveiled for these hydrolysable tannin representatives, as well as the results of our efforts toward their chemical total synthesis,[4] will be presented during this lecture.

Dr. Quideau is the guest of Prof. Xavier Ottenwaelder

Where
Room GE 110.00 , Centre for Structural and Functional Genomics (7141 Sherbrooke W.), Loyola Campus
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Organizer Dajana Vuckovic