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Structural elucidation of Natural compounds (from African traditional medicinal plants)

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Why natural compounds?





Natural substances (mainly plants) have been utilized for medicinal purposes since early human history.

- The first pharmacologically active pure natural compound, morphine, was isolated by Friedrich Sertürner (21-years-old) in 1804.
- After this pivotal discovery, drugs from plants could be purified, studied and administered in precise dosages, independently from the source, or age, or state of preservation of the material.







After the isolation of *penicillin* (Alexander Fleming, 1928) the pharmaceutical research included the screening of microorganisms for new antibiotics

- Pharmaceutical research expanded after the Second World War.
- ➢ By 1990, about 80% of drugs were either natural products or inspired by them.







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A recently approved drug: *Aplidine*, a marine natural product





Aplidium albicans (tunicate, marine invertebrate animal)

Plitidepsin (aplidine) (approved in Australia at the end of **2018** for the treatment of multiple myeloma)



Some Chemists' tools for natural products discovery:

- Highly efficient HPLC columns
- HPLC-MS techniques
- Multidimensional NMR
- Cryo- and nanoprobes for NMR
- HPLC-NMR
- HPLC-SPE-NMR



Our research activity:

Isolation and structural determination of natural

products from medicinal plants

new compounds from Cameroonian medicinal plants



Screening of Cameroonian medicinal plants

In collaboration with

Prof. Leon Tapondjou, Dschang University, Cameroon



(Data derived from map produced by National Geographic Map Machine)



Dschang







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Entada rhedii (Mimosaceae)

also known as African dream herb:

- Widely distributed in tropical Africa
- Tobacco made from the seeds is reported to cause vivid dreaming
- The seeds are used for topical applications and ointment for the treatment of icterus
- Not many data reported in the literature concerning the phytochemical composition of this plant























Chemistry and Advanced Chemical Methodologies

Spectroscopic methods (organic part: NMR and MS)

MS techniquesMultidimensional NMR



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Thank you for your kind attention