

**Secondary metabolites of vegetable origin:
classification, biosynthesis, analysis and biological activity**

Carlo Bicchi

Lecture 1: Definition of Phytochemistry –

Introduction to Phytochemistry – Introduction to chemical ecology – Definition of environment - Primary and secondary metabolism (definitions) – Biosynthetic pathways in vascular plants

Lecture 2: Phenolic compounds

General classification – Shikimate pathway – Characterization of phenols (phenols and phenolic acids) -

Phenyl propanoids (cinnamic acids, phenylpropanoids, coumarins, furanocoumarins, lignanes) –

Flavonoids: biosynthesis – Classification (chalcones, flavanones, aurones, flavones, flavonols, anthocyanidines, isoflavones) – Quinones: malonate pathway – Classification (quinones, naphthoquinones, anthraquinones, quinone isoprenoids). Phenolic compounds of interest in the pharmaceutical and food fields

Lecture 3: Fatty acids and polyketides: the acetate pathway.

Lecture 4: Terpenoids

General classification – Mevalonate pathway - Monoterpenoids: classification and biosynthesis; main monoterpene skeletons – Definition of essential oils. - Sesquiterpenoids: classification and biosynthesis, main sesquiterpene skeletons – Diterpenoids: classification and biosynthesis, main diterpene skeletons - Triterpenoids: classification and biosynthesis, main triterpene skeletons - Carotenoids: classification and biosynthesis, main carotenoid skeletons - Terpenoids of interest in the pharmaceutical and food fields

Lecture 5: Alkaloids

General classification – Alkaloids deriving from ornithine, introduction to their biosynthesis (tropane and pyrrolizidine alkaloids) – Alkaloids deriving from tyrosine, introduction to their biosynthesis (opium alkaloids and curarins) – Alkaloids deriving from tryptophan (ergot, vinca and rawolfia alkaloids); biosynthesis of lysergic acid.

Alkaloids of interest in the pharmaceutical and food fields

Lecture 7:

How to deal with a phytochemical problem – Library Search and phytochemical studies - Bioguided assay – Approaches to the study of the chemical composition of a plant extract or distillate- Analysis of complex mixtures of secondary metabolites; sample preparation and analysis

Termin	Dzień tygodnia	Godzina	Miejsce
12.11.2012	Poniedziałek	9.15 – 12.00	Sala 300 GG
13.11.2012	Wtorek	9.15 – 12.00	Sala 300 GG
14.11.2012	Środa	9.15 – 12.00	Sala 300 GG
15.11.2012	Czwartek	9.15 – 12.00	Sala 300 GG
16.11.2012	Piątek	9.15 – 12.00	Sala 300 GG