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A Brief Note on Phytochemistry

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Editorial

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Editorial Note

The study of phytochemicals, which are chemicals derived from plants, is known as phytochemistry. Phytochemists work to describe the structures of the large number of secondary metabolites found in plants, as well as their functions in human and plant biology and biosynthesis. Plants produce phytochemicals for a variety of reasons, including defence against insect attack and plant disease. Plant compounds are diverse but the majority can be classified into four major biosynthetic classes: alkaloids, phenylpropanoids, polyketides and terpenoids.

Phytochemistry can be classified as a branch of botany or chemistry. With the help of ethnobotany, activities can be led in botanical gardens or in the wild. Extraction, isolation and structural elucidation of natural products, as well as various chromatography techniques are commonly used in the field of phytochemistry (MPLC, HPLC and LC- MS). Phytochemicals Many plants produce chemical compounds to protect themselves from herbivores. The major classes of pharmacologically active phytochemicals are discussed below, along with examples of medicinal plants containing them. Weeds containing phytochemicals, such as nettle, dandelion and chickweed are frequently found around human settlements [1-2].

Many phytochemicals, such as curcumin, epigallocatechin gallate, genistein and resveratrol are pan-assay interference compounds and are therefore ineffective in drug discovery. Alkaloids are bitter-tasting chemicals that are abundant in nature and are frequently toxic [34].As drugs, there are several classes with various modes of action, both recreational and pharmaceutical.

Alkaloids are a type of basic, naturally occurring organic compound with at least one nitrogen atom. This class also includes some related compounds that have neutral or even weakly acidic properties. Some synthetic compounds with similar structures are also known as alkaloids [5-6]. Alkaloids, in addition to carbon, hydrogen, and nitrogen, may also contain oxygen, sulphur and on rare occasions, other elements such as chlorine, bromine, and phosphorus. A wide range of organisms, including bacteria, fungi, plants and animals produce alkaloids. Acid-base extraction or

Most alkaloids have oxygen in their molecular structure; these compounds are typically colourless crystals at room temperature. Alkaloids that do not require oxygen, such as nicotine or coniine are typically volatile, colourless, oily liquids. Some alkaloids, such as berberine (yellow) and sanguinarine are coloured (orange). Most alkaloids are weak bases, but some are amphoteric, such as theobromine and theophylline. Many alkaloids are poorly soluble in water but readily soluble in organic solvents such as diethyl ether, chloroform, or 1, 2- dichloroethane. Caffeine, cocaine, codeine, and nicotine are slightly soluble in water, whereas morphine and yohimbine are very slightly soluble in water. Alkaloids and acids combine to form salts of varying strength. These salts are typically freely soluble in water and ethanol but poorly soluble in the majority of organic solvents [7-8]. Alkaloids have a wide range of pharmacological activities, including antimalarial (e.g., quinine), antiasthmatic, anticancer, cholinomimetic and vasodilatory (e.g., ephedrine). Plant extracts containing toxic alkaloids, such as aconitine and tubocurarine, have been used to poison arrows since antiquity. solvent extractions followed by silica-gel column chromatography can be used to purify them from crude extracts of these organisms [9-10].

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