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PHARMACOGNOSY: DOCUMENTING NATURAL PRODUCTS AND TRADITIONAL MEDICINES TO ENHANCE DRUG DISCOVERY

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Introduction: Pharmacognosy is the branch of pharmacology that studies drugs in their crude and/or natural states. Many useful drugs are derived from plants, animals, microbes and inorganic sources.

Aims: To examine the potential of traditional medicines and natural products and to demonstrate the importance of pharmacognosy in drug discovery.

Methods: A literature review was undertaken to highlight some important drugs derived from natural products and traditional medicines.

Microbial Derived Medicines: Penicillin, mycophenolic acid and lovostatin are examples of important medicines derived from fungi. Many antibiotics are derived from bacteria (eg streptomycin, chloramphenicol, tetracycline, erythromycin, neomycin). The bacterial polypeptides doxorubicin, daunorubicin and actinomycin D are routinely used in the treatment of cancers.

Marine Invertebrate Medicines: Some sponges have antimicrobial, antimalarial and anticancer bioactivities and thus have potential for drug development. Sarcophytol A from the soft coral *Sarcophyton glaucum* inhibits tumour growth.

Terrestrial Animal Medicinals: The antimicrobial activity methyl glyoxyl in bee honey (eg Manuka honey) is an interesting example of an animal pharmacognostic agent. Toadskins contain cardioactive agents formerly used to treat oedema. Emu and goanna oils both have distinctive therapeutic properties.

Inorganic Medicines: Inorganic chemicals may also have medicinal properties. Silver nanoparticles have reputed antiseptic properties, gold thiolates have been used to treat arthritis and selenium supplements may be useful for treating a variety of health disorders.

Plant Medicines: It is estimated that approximately 25% of all prescription drugs were originally derived from plants. Furthermore, 75% of new anticancer agents marketed 1981-2006 were derived from plants. Plant derived drugs (phytochemicals) form the basis of most traditional medicine systems (eg Aboriginal, TCM, Ayurveda).

Conclusions: Pharmacognostic medicines are effective for many conditions and still hold much promise for future drug discoveries. There has been a recent increase in interest in applied pharmacognosy with increasing publications in journals such as *Pharmacognosy Communications*.