CLINICAL USAGE OF MOST COMMON DRUGS BASED ON NATURAL PRODUCTS

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Abstract

According to the World Health Organization (WHO), 80% of people still rely on plant-based traditional medicines for primary health care. Of the 252 drugs considered as basic and essential by the WHO, 11% are exclusively of plant origin and a significant number are synthetic drugs obtained from natural precursors.
The earliest records of natural products were depicted on clay tablets in cuneiform from Mesopotamia (2600 B.C.) which documented oils from *Cupressus sempervirens* and *Commiphora* species which are still used today to treat coughs, colds and inflammation.

The sources of 33$\pm$9% of the new drugs from 1981 to 2014 were natural products.

Felix Hoffmann introduced the acetylsalicyclic acid in 1897 which was derived from the natural product, salicin isolated from the bark of the willow tree *Salix alba*. In the beginning of 1900s, it was used for common cold and flu. In 1902, first case report of aspirin associated acute urticaria and angioneurotic edema was submitted. In 1950s, its role in stroke and MI was studied. In 1996, FDA approved its indication in prophylaxis of acute coronary events. Some other examples of drugs from plants are morphine (*Papaver somniferum),* digoxin (*Digitalis lanata),* quinine *(Cinchona succirubra),* pilocarpine *(Pilocarpus jaborandi).* Penicillin was discovered by Alexander Fleming from the fungus, *Penicillium notatum* in 1929.

Natural products are regulated under different classifications, such as complimentary medicines, natural health products, prescription medicines, over the counter medicines, food supplements or traditional herbal medicines.

In US, natural products are classified as drug, foods or a dietary supplement by the United States Food and Drug Administration on the basis of the claims or end use. A product that is used to prevent, diagnose, mitigate, treat or cure a disease would fall under the category of drug. If the intended use of a botanical product is to affect the structure or function of the human body, it may be classified as either a drug or a dietary supplement.

In European Union these products are regulated by "The European Medicine Agency – Committee on Herbal Medicinal Products" as:

- A full marketing authorization by submission of a dossier, which provides the information on quality, safety and efficacy of the medicinal products including the physicochemical, biological or microbial tests and pharmacological, toxicological and clinical trials data; under directive 2001/83/EC.

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- For traditional herbal medicinal products, which do not require medical supervision, and where evidence of long traditional of use of medicinal products exists, and adequate scientific literature to demonstrate a well-established medicinal use cannot be provided, a simplified procedure under directive 2004/24/EC exists.

The major concerns about these agents are lack of efficacy and safety procedures, lack of quality in the production, lack of adverse reactions data, lack of long-term safety, lack of data in risk group patients and drug interactions. All clinicians and patients need to be aware that because of these products are natural, they are not safe at all and irrational usage of these medications may lead to major health and drug related problems.

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