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Side Effects of Herbal Medicines
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During the last decade Herbal medicines or herbal medicinal products have gained increasing interest in patients especially as a measure for self-medication for minor illnesses and complaints. Contrary to synthetic drugs herbal medicines especially in the opinion of laymen but also of physicians and clinicians are considered as natural, in toxic and healthy ingredients, lacking of severe adverse effects.

Most of the data on adverse effects associated with herbal medicines is anecdotal, and assessment and classification of causality is often not possible, as herbal medicines in general consist of mixtures of different ingredients. According to several authors about 30% of all prescriptions in the United States, Canada, and Europe contain either medicinal plants, a purified extract or an active component, extracted from medicinal plants. In Germany the proportion of prescriptions containing herbal components is estimated to be about 6%. Concerning the widespread and increasing use of herbal medicines a higher proportion is probable.

Extracted from the acclaimed Meyler's Side Effect of Drugs, 15th Edition and the latest volumes of the companion series "Side Effects of Drugs Annual" Elsevier now offers a series of derivative works "Meyler's Side Effects of herbal medicines". This edition gives a systematic view of adverse effects of herbals and has been published as a reference to health professionals and homoeopathic practitioners in understanding the effects of herbal Drugs. The book is up to now the only drug guide that includes clinical case studies and expert analyses.

The volume contains monographs on individual herbal products structured in the following manner: Plant family, Genera, Species, Alternative common names, Active ingredients, Uses (including traditional and modern uses), Adverse effects and References. Sources of information are:

- **Plants National Database** <http://www.plants.usda.gov/index.html> (Families and Genera)
- **A modern herbal** by Mrs. M.Grieve (1931, <http://www.botanical.com/botanical/mgmh.html>) (Alternative common names)
- **The desktop Guide to Contemplentary and Alternative Medicine: an Evidence-Based Approach** by E Ernst, MH Pittler, C. Stevenson, and A White [Mosby 2001] (Alternative common names)
- **Dictionary of Plants Containing Secondary Metabolites** by John S. Glasby (Taylor and Francis, 1991)

The introducing chapter gives general information on herbal medicines starting with uses, adverse effects, frequencies of adverse reactions to herbal medicines, adulteration and contaminations such as benzodiazepines, fenfuramine, glucocorticoids, hypoglycaemic drugs, heavy metals, toxins, micro-organisms and pesticides.

One chapter of adverse effects refers to herbal mixtures of the Chinese medicine and Kampo medicine, containing various ingredients and their influence on several organs such as liver, urinary tract and systems e.g. the cardiovascular, respiratory, nervous, sensory and psychiatric system. Further the effect of herbal mixtures, containing animal and human tissue derivatives (present in some medicines of the traditional Chinese medicine), on infection risks, body temperature and susceptibility in persons with glucose-6-phosphate dehydrogenase deficiency have been listed.

In the section herb-drug interactions the interactions of various herbal medicines with the anticoagulant warfarin were reviewed systematically. Of all the reports, 72% described potentiation of the effect of warfarin, but 82% were of poor quality and 86% of which were only case reports. Further reviewed herbal medicines interacting with warfarin were *Allium sativum* (garlic), *Angelica sinensis* (doug quai), *Camellia sinensis* (green tea), *Cucurbita pepo*, *Ginkgo biloba*, *Hypericum perforatum* (St. John's wort), *Lycium barbarum* (Chinese wobbleberry), *Panax ginseng*, *Salvia multiorrhiza* (danshen), *Zingiber officinale* (ginger), *PC-Spes* (a mixture of *Chrysanthemum morifolium*, *Isatis indigotica*, *Glycyrrhiza glabra* (licorice), *Ganoderma lucidum*, *Panax pseudoginseng*, *Robdosia rubescens*, *Serenoa repens* (saw palmetto), *Scutellaria baicalensis* (skullcap), and *Quillinggao* (a popular Chinese mixture containing a multitude of herbal ingredients [containing *Fritillaria cirrhosa* and other *Fritillaria* species, *Paeoniae rubra*, *Lonicera japonica*, and *Poncirus trifoliata*]).

The Chapter on herb-drug-interactions is completed by an alphabetical table of 77 families of plants and their 186 species that are the subjects of monographs in the encyclopedia and tables of 293 references. In the main part the monographs of herbal medicines are listed in alphabetical order (*Acanthaceae* – *Zygophyllaceae*). Each monograph is classified by: General information, Adverse effects on the different organs and functions, Drug interactions, and References.

In some monographs also reports of influences on *Drug administration route* (Lamiaceae, Myrtaceae), *Drug contamination* (Berberidaceae, Celastraceae), *Drug-drug interactions* (Araliaceae, Arecaceae, Clusiaceae, Ericaceae, Fabaceae, Ginkgoaceae, Lamiaceae, Liliaceae, Rosaceae), *Drug overdose* (Celastraceae, Ginkgoaceae, Lauraceae, Liliaceae, Myrtaceae, Piperaceae, Taxaceae, Valerianaceae), *Drug withdrawal* (Clusiaceae, Valerianaceae), *Electrolyte balance* (Fabaceae, Malvaceae, Rubiaceae), *Fertility* (Celastraceae, Malvaceae), *Fetotoxicity* (Boraginaceae, Celastraceae, Euphorbiaceae), *Formulation* (Ginkgoaceae), *Haematologic parameters* (Arecaceae, Asteraceae, Ericaceae, Ginkgoaceae, Liliaceae, Papaveraceae, Piperaceae), *Immunologic parameters* (Arecaceae, Asteraceae, Celastraceae, Echinaceae, Euphorbiaceae, Fabaceae, Myrtaceae, Taxaceae, Viscaceae), *Infection risks* (Fabaceae), *Lactation* (Celastraceae), *Metabolism* (Burseraceae, Celastraceae), *Pregnancy* (Clusiaceae, Zingiberaceae), the *Reproductive system* (Celastraceae), *Susceptibility factors* (Papaveraceae), *Teratogenicity* (Celastraceae) and *Tumorigenicity* (Aristolochiaceae, Celastraceae, Fabiaceae, Rhamnaceae, Viscaceae) are listed.

At least Compounds found in Herbal products or are directly derived from herbal sources such as Amygdalin, Anticholinergic alkaloids, Cannabinoids, Cardiac glycosides, Coumarin, Ephedrine and pseudoephedrine, Haematitium, HMG coenzyme-A reductase inhibitors, Ipecacuanha, Emitine and Dihydroemetine, Limonene, Nicotine, Phytoestrogens,

Pyrolizidine alkaloids, Parteine, Vitamin E and Yohimbine are presented. The book is completed by an index of drug names.

The book edited by J.K. Aronson provides comprehensive information on adverse effects of herbal medicines. The material collected from clinical case reports and some systematic clinical studies shows, that herbal medicines have the potential to elicit the same type of adverse reactions as synthetic drugs. "Side Effects of Herbal Medicines" is a book which can be recommended as a valuable reference book for all pharmacists, doctors in private praxis and hospitals, health professionals and homoeopathic practitioners. Further this book offers extensive information on herbal medicines for anyone with an interest in scientifically solid phytotherapy.

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