2. PHARMACODYNAMIC INTERACTIONS OF MEDICINAL HERBS AND DRUGS

Bacinschi Georgel, Beşliu Alexandrina

Academic adviser: **Gonciar Veaceslav,** MD, PhD., Professor, Head of the Department of Pharmacology and Clinical Pharmacy, State Medical and Pharmaceutical University „Nicolae Testemiţanu", Republic of Moldova

Introduction: Phytotherapy is increasingly evident in the complex treatment of diseases due to the elucidation of the active compounds from plants with beneficial pharmacological effects. The creation of a scientific base on rational use of medicinal herbs opens new prospects for the pharmacotherapy improving. Therefore, the issue of interactions between drugs and plant drugs in terms of synergism and antagonism becomes current for arguing security and safety of their association. Data on such interactions are minor and dispersed, as they are more difficult due to the varied and rich content of active ingredients from plants. Interactions between herbs and drugs can be detected in pharmacotherapeutic and toxicological aspect.

Purpose and objectives: is the bibliographic study of the pharmacodynamic interactions between medical herbs and drugs, their reflection in the training process.

The results and discussion: Pharmacodynamic studies of herbal drugs and of their active principles have demonstrated the presence of a variety of pharmacological effects (anti-inflammatory, immunostimulant, antioxidant, antimicrobial, sedative, anxiolytic, antispasmodic, etc.). It was determined that the association with drugs can have unpredictable consequences, both therapeutic and toxicologic. Thus, pharmacodynamic interactions can be achieved by: drug interaction with receptors, allosteric modulation of receptor sites; influencing mediator systems (release, uptake, synthesis, metabolism), modifying the activity of enzymes, changing the activity of organs and systems, the development of liver, kidney disturbances etc. Thus, St. John's wort drugs manifest antidepressant action by inhibiting the norepinephrine, serotonin, dopamine reuptake. However, they also induce adverse effects in combination with antidepressants as selective inhibitor of the reuptake of these neurotransmitters. Valerian benzodiazepines shows the same effect by modulating the GABA - ergic system. Echinacea, ginseng, by their phenolic triterpenes, flavonoids, saponins, polysaccharides determine the immunomodulatory effect which can produce contradictory effects in patients under immunosuppressive organ transplantation. Garlic drugs develop multiple metabolic effects, including the inhibition of lipid-lowering hydroxy-methyl-glutaryl - CoA - reductase for stimulation of the efficiency of statins. The associated use of these compounds may increase the incidence of rhabdomyolysis due to increased concentration of statins as a result of pharmacokinetic interactions. It is necessary to mention that the result of pharmacokinetic interactions, particularly produced by the induction and/or inhibition of cytochrome P-450 and transport systems will be characterized by the amplification and/or decrease of the pharmacological effects and adverse reactions.

Conclusion. The associated use of drugs with medicinal herbs for the treatment of diseases requires strict monitoring of the efficiency and safety through the possible pharmacokinetic and pharmacodynamic interactions. The information about the consequences of these interactions must be brought to the attention of physicians, pharmacists and patients in order to ensure a rational pharmacotherapy.

Keywords: herbs, phytotherapy, interaction, pharmacodynamy

3. PHARMACOKINETIC INTERACTIONS OF MEDICINAL HERBS AND DRUGS

Besliu Alexandrina, Bacinschi Georgel

Academic adviser: **Scutari Corina**, M.D., associate professor - Department of Pharmacology and Clinical Pharmacy, State Medical and Pharmaceutical University „Nicolae Testemiţanu", Republic of Moldova

Introduction: The utilization on a large scale from 30 to 85% of basic and active compounds from plants according to WHO data is an actual problem of modern medicine due to the possible interactions with drugs. International bodies (WHO, FDA, EMEA, EFSA) are much concerned about the spreading of medical herbs marketing which do not contain a proper reference material and/or not being certified by the

WHO. The problem becomes even more complicated due to the fact that vegetal drugs are used concomitantly with medicines as patients and even doctors do not always pay the necessary attention to this problem considering medical herbs inoffensive and not being harmful for health.

Purpose and objectives: is to analyze bibliographic data bases which refer to the significance of pharmacokinetic interactions and the consequences of the associated use of vegetal drugs and medicines.

The results and discussion: Analysis of literature showed the existence of hundreds of experimental and clinical studies, of cases referring to interactions of approximately 50-85 of medical herbs and drugs, many of which demonstrate clinical significance. It was proved during this research that the pharmacokinetic interactions take place at different levels of absorption, distribution, metabolism and elimination. A particular interest for medical practice is the concomitant utilization with medicines with drugs from rattle (*Hypericum perforatum*), grapefruit (*Citrus paradisi*), ginseng (*Panax ginseng*), ginkgo biloba (*Ginkgo biloba*), garlic (*Allium sativum*), echinaceea (*Echinacea purpurea*), thistle (*Silybum marianum*) etc.. The most important pharmacokinetic interactions were reported at the level of the cytochrome P-450 activity and of the conveyors (P-glycoprotein etc.). It was established that the grapefruit, echinaceea, green tea, garlic, milk thistle, licorice, chamomile, lemon Chinese are inhibitors of P-450 cytochrome (CYP 1A2, 2C9, 2C19, 2D6, 2E1, 3A4 etc.), while the Hypericum perforatum, Panax ginseng, eleuterococcus, rosemary, green tea, Echinaceea purpureae manifested as inductors. Some of the plants (echinaceea, green tea, ginseng etc.) had an effect on CYP 3A4 in liver and as inhibitor of isoenzyme respectively in the intestine. Recent studies showed an important influence of medical herbs on the activity of transporting systems, especially on P-glycoprotein, located in the intestine, liver, kidney, hematoencephalic barrier, placenta, testicles. The P-glycoprotein acts as an efflux pump, and its induction or inhibition will influence the absorption, transport and the elimination of drugs.

Conclusion: Medicinal herbs when used concomitantly with medicines will show pharmacokinetic interactions with essential changes of the level of medicines in the body and respectively of therapeutic effects. These data require adequate information given by the doctors, pharmacists and patients, with their detailed description in the instructions and medical literature as well.

Keywords: interactions, medicinal herbs, pharmacokinetic

4. INFLUENCE OF ANTIBIOTICS ADMINISTRATED "PER OS" ON INTESTINAL MUCOSA

Borsciova Inessa

Academic advisers: **Uncu Livia**, PhD, Department of Pharmaceutical and Toxicological chemistry, Drugs control; **Lozovanu Svetlana**, Associate professor, Department of Human Physiology and Biophysics, State Medical and Pharmaceutical University "Nicolae Testemiţanu", Republic of Moldova

Introduction: According to academician A.M.Ugolev, the bacterial flora is a necessary attribute of the existence of complex organisms. It is known that the most numerous and complicated by its composition population of bacteria is in the gastro-intestinal tract, particularly in its lower regions. There were made significant advances in the study of the intestinal microbiota and its functional role in humans and animals in recent decades. There is also shown that changing normal intestinal microbiota composition, (the so-called intestinal dysbiosis) as during the administration of antibiotics, leads to a number of disfunctions with severe consequences for the organism.). Literature contains very comprehensive information about the changes in composition of the bacterial flora under the influence of various antibiotics. Although it has very little information about the impact these drugs have on the final stage of the digestive process, which largely determines the overall body metabolism and homeostasis. The purpose of this work was to investigate during the experiments on rats, the effects that Ampicilline and Metronidazole (antibiotics which are widely used in clinic) have on some indicators of the general organism condition, structure of a small and thick intestine, and activity of two intestinal enzymes: transmembrane M aminopeptidase and predominantly of intracellular glycyl-L-leycindipeptidaze, which are carrying out final stages of hydrolysis of proteins. Also there was collected data about the microbiological resistance to these drugs.