



Education in Pharmacognosy/Pharmaceutical Biology: Present Situation and Future Prospects II



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DRUGS OF BIOLOGICAL (NATURAL) ORIGIN I

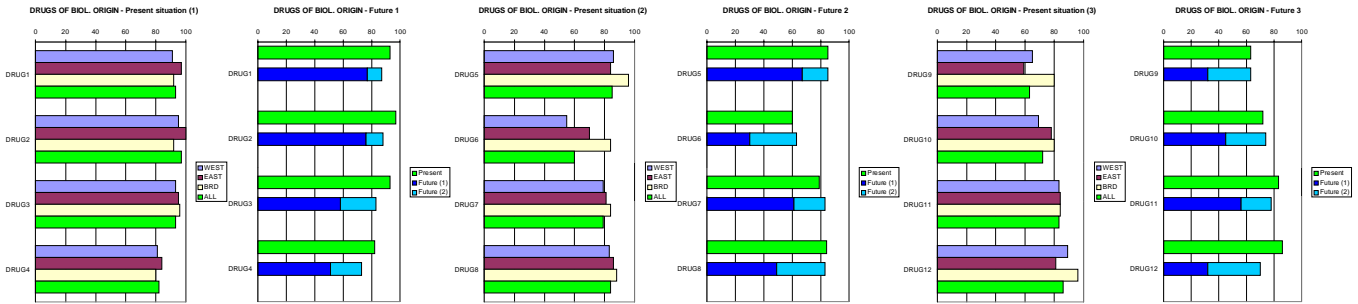
DRUG1	Medicinal plants, crude drugs, preparations (parent plants, cultivation and harvesting, secondary metabolites, active principles, mode of actions)
DRUG2	Pharmaceutically used secondary plant metabolites (including essential oils, gums)
DRUG3	Pharmaceutically used primary plant metabolites
DRUG4	Natural addictive toxins and their sources, drugs of abuse/addiction of plant origin

DRUGS OF BIOLOGICAL (NATURAL) ORIGIN II

DRUG5	Antibiotics and biological cytostatics (sources, production, mode of action, therapeutic uses, mechanisms of resistance and transmission)
DRUG6	Microbes used as drugs (e.g. <i>S. cerevisiae</i> , <i>E. coli</i> , <i>Lactobacillus</i> , yeast products, etc)
DRUG7	Drugs produced by biotechnology
DRUG8	Enzymes, vitamins and hormones, including activation and inhibition of biological processes

DRUGS OF BIOLOGICAL (NATURAL) ORIGIN III

DRUG9	Blood products
DRUG10	Biotechnology (Production and processing of biologically-derived pharmaceuticals)
DRUG11	Isolation of natural products (strategies, methods)
DRUG12	Biosynthesis of plant and microbial constituents



PHYTOPHARMACEUTICALS (HERBAL MEDICINAL PRODUCTS)

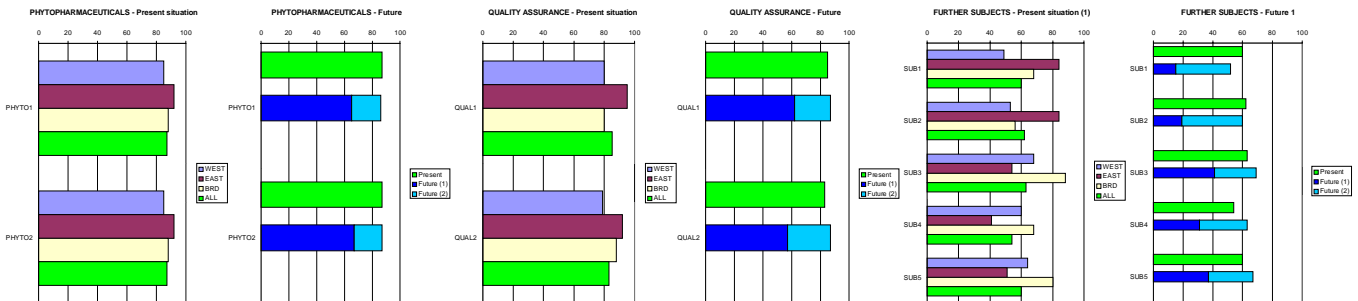
PHYTO1	Quality, activity, efficacy, adverse effects
PHYTO2	Therapeutic uses

QUALITY ASSURANCE OF DRUGS OF NATURAL ORIGIN

QUAL1	Identification and quality assessment of plant-derived drugs and preparations
QUAL2	Analytical procedures for investigation and standardization of herbal medicinal products and other preparations of biological origin

FURTHER SUBJECTS I

SUB1	Cultivation and collection of medicinal plants
SUB2	Cell and tissue culture (plant and animal cells)
SUB3	Principles of immunology
SUB4	Application of immunological and enzymatic methods in analysis, diagnostics and therapy
SUB5	Vaccination products, immunoglobulins and immune sera (production, assay and use)



FURTHER SUBJECTS II

SUB6	Molecular biology (including molecular biology techniques)
SUB7	Gene technology, gene technology for production of pharmaceuticals
SUB8	Poisonous plants and fungi (phytoxicology)
SUB9	Alternative therapies based on biological remedies or ethnopharmacognosy
SUB10	Health food and dietary supplements

OTHER SUBJECTS

SUB11	Gene expression and regulation
SUB12	Regulation of cell cycle, cell division, cell and tissue differentiation
SUB13	Gene therapy
SUB14	Viruses, oncogenes and cancer

