

PHARMACOLOGICAL AND TOXICOLOGICAL PROPERTIES OF SMART DRUGS

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The term Smart Drugs indicates a series of nutrients, beverages, vitamins and especially active principles extracted from different plants (e.g. ephedrine or sinephrine), most of which induces various effects on Central Nervous System.

Smart Drugs are a group of legal stimulant substances producing various excitatory or adaptogenic effects (e.g. caffeine, taurine, ginseng extracts). Other Smart Drugs are psychoactive products able to induce psychotropic and hallucinogenic effects.

Although some of these drugs may produce sensorial and behavioural alterations, they are freely sold in the so-called "smart-shops", stores specialized to sell various herbal products often near to the limit of legality.

Since 2003, an increase of reports of adverse drug reactions induced by these substances was observed in Italy. For this reason in Italy was decided the confiscation of large amount of Smart Drugs.

On the basis of these considerations the Istituto Superiore di Sanità (ISS) realized in collaboration with the Department of Clinical and Experimental Medicine and Pharmacology of the University of Messina, a project named "Monitoring of Smart Drugs", in which botanical, chemical and analytical characteristics of the most popular Smart Drugs were described. Aim of the study was also listing pharmacological and toxicological properties (included adverse effects, herb-drug interactions and effects in pregnancy and breastfeeding) of the plants and their active principles.

Smart Drugs studied were: *Amanita muscaria*, *Areca catechu*, *Argireya nervosa*, *Artemisia absinthium*, *Banisteriopsis caapi*, *Calea zacatechichi*, *Citrus aurantium*, *Ephedra sinica*, *Ipomea violacea*, *Mitragyna speciosa*, *Pausynistalia yohimbe*, *Rivea corymbosa*, *Salvia divinorum*, *Sceletium tortuosum*, *Sida cordifolia*, *Tribulus terrestris*, *Trichocereus Sp.* (*T. macrogonus*, *T. pachanoi*, *T. peruvianus*, *T. validus*, *T. werdermannianus*), *Voacanga africana*, *Withania somnifera*.

Sources of informations were represented by the following databanks: PubMed, Medline, Micromedex, Martindale; Drugdex, Poisindex; Altmedex, Reprotox, Herbal Medicines: a guide for Health-Care professionals and Toxnet.