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The effect of administration of fractions of hydroponic *Teucrium polium* on the blood biochemical parameters characterizing the functional activity of the liver

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It is well known that medicinal plants play an important role in health care system and can be called as a main source of new chemical substances with potential therapeutic effects. Bioactive compounds in plants can be defined as secondary plant metabolites eliciting pharmacological or toxicological effects in animals. The aim of the present work is to summarize examinations about biologically active substances and pharmacological activity of *Teucrium polium*. The typical bioactive compounds in plants are produced as secondary metabolites. 24 albino male rats weighting 220±10 g were divided into four groups each group consists of 6 rat. Group one was considered as the negative control group which received normal saline (5 mL/Kg). 3 groups were injected with the Maximum Tolerated Dose (MTD) of ethanol extract 530 mg/kg intramuscularly (i.m.) (n=6); MTD of ethyl acetate fraction of ethanol extract 385 mg/kg i.m. (n=6); MTD of aqueous fraction of ethanolic extract 400 mg/kg i.m. (n=6). After 24 hours animals were sacrificed, their blood was collected to determine serum enzyme activities of ALT and AST. The results of this study showed the aqueous fraction of ethanol extract of *Teucrium polium* (without furolactone acids) is not hepatotoxic, which is the basis to conclude that hepatotoxicity is conditioned by furolactone acids.

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Characterization of natural gum-based extended release matrix tablets of two model drugs by direct compression

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Extended release matrix tablets of poorly soluble diclofenac sodium and highly soluble metformin hydrochloride were formulated by direct compression employing cashew gum, xanthan gum and hydroxyl propyl methyl cellulose as release retardants. Cashew gum was extracted from the stem bark of *Anacardium occidentale* L. and its suitability as a direct compression excipient was evaluated using the SeDeM Diagram Expert System. Thirteen diclofenac sodium and metformin hydrochloride tablet formulations were prepared with varying amounts of the release retardants by direct compression. Flow properties of blended powder formulations and the uniformity of weight, crushing strength, friability, swelling index and drug content of the compressed tablets were evaluated. *In vitro* drug release of the matrix tablets was determined in phosphate buffer (diclofenac: pH 7.4; metformin: pH 6.8) and the kinetics of drug release was determined by fitting the release data to five kinetic models. Cashew gum was determined to be a suitable direct compression excipient with a good compressibility index (ICG) value of 5.173. Diclofenac and metformin tablets produced exhibited fairly good physical properties. Tablet swelling and drug release in phosphate buffer was dependent on the type and amount of release retarding polymer used and solubility of the drug. Extended release of diclofenac (24 h) and metformin (8-12 h) from the matrix tablets in aqueous medium was achieved. Drug release from diclofenac tablets fitted zero order, first order or Higuchi model while release from metformin tablets followed Higuchi or Hixson-Crowell model. The mechanism of release of the two drugs was mostly through Fickian diffusion and anomalous non-Fickian diffusion.

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