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Study on natural polymer Moringa gum for enhancing the bioavailability of drugs

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The objective of the study was to evaluate the naturally available Moringa Gum as drug carrier and mucoadhesive component in buccal delivery and to compare the bioavailability of Propranolol Hydrochloride buccal tablet with the oral tablet in healthy human volunteers. The buccal tablets containing various concentration of Moringa Gum were prepared and coated with 5% w/v ethyl cellulose on one face and oral tablet without polymer were formulated using a direct compression technique. The muco adhesion of the polymer was evaluated using porcine buccal mucosa as a model tissue under simulated buccal conditions. The tablets were subjected to in vitro drug release studies at pH 6.8 phosphate buffer and the bioavailability study was condusted with the 16 healthy volunteers. The force of detachment for the tablets 10.21, 12.12, 14.31 and 15.42. The cumulative percentage release of propranolol in pH 6.8 phosphate buffer were found to be 97.13, 98.12 and 100.1 (F3, F4 & F5 respectively). The bioavailability of buccal tablet (F2, F3 and F4) and oral (F5) tablet was found to be 2491.69, 4292.17, 4244.9 and 2196 ng.hr/ml. The study indicates that the Moringa Gum in the concentration of 30 and 40 mg (F3 and F4) not only gives higher bioavailability but also have sufficient mucoadhesive property for clinical application.

New Spectrophotometric methods for the determination of Zolpidem Tartrate

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Zolpidem behaves as a sleep inducer without the muscle relaxant and anticonvulsant effects of the benzodiazepines. The hypnotic actions of Zolpidem, like benzodiazepine hypnotics, are mediated at the benzodiazepine recognition site of the GABA receptor complex. Zolpidem tartrate is a non benzodiazepine hypnotic agent binds preferentially to one benzodiazepine receptor subtype ω-1 bezodiazepine-1 thought to mediate hypnotic effects. Two simple, precise, accurate, rapid and sensitive spectrophotometric methods were developed for the determination of Zolpidem tartrate in pharmaceutical dosage forms in Acetate buffer (pH-4.0). A double beam UV-VIS spectrophotometer (UV-1800, Shimadzu, Japan) connected to computer loaded with spectra manager software UV Probe was employed with spectral bandwidth of 1nm and wavelength accuracy of ± 0.3 nm with a pair of 10 mm matched quartz cells. In the first method the absorption maxima (λ_{max}) was chosen at 238.00 and in the second method (Derivative spectroscopy) the amplitude was recorded (minima at 249.03 and maxima at 229.93) for the determination of Zolpidem tartrate. Zolpidem tartrate follows Beer-Lambert's law over the concentration range of 0.5-20 μg ml^{-1} (r^2= 0.999) for both the methods. The % RSD in precision and accuracy studies was found to be less than 2.0. The proposed methods were validated and can be successfully applied for the determination of Zolpidem tartrate in pharmaceutical formulations.

Simultaneous estimation of Fluoxetine and Norfluoxetine in plasma by RP-HPLC employing pre-column derivatization for UV-sensitivity enhancement

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A rapid high-performance liquid chromatographic method is described for the simultaneous estimation of the widely used antidepressant drug, fluoxetine and its principal metabolite norfluoxetine in human plasma. Precolumn derivatization of norfluoxetine was done using 4-dimethylaminobenzaldehyde to overcome the limitations of sensitivity of norfluoxetine. After liquid-liquid extraction the separation of analytes and internal standard from endogenous matrix interference was achieved using a reversed-phase HIQ sil ODS column (250 mm length x 4.6 mm internal diameter) KYA TECH (Japan) and assayed by ultraviolet absorption at 227 nm. The isocratic mobile phase (1 ml/min.) consisting of acetonitrile: water: triethylamine: 0.01M O.P.A. (70:30:0.5:2) was used to separate fluoxetine, norfluoxetine and the internal standard, nebivolol. The relative retention times were 2.49, 4.24 and 7.29 min for norfluoxetine, fluoxetine and nebivolol, respectively. Chromatographic run time was 10 min and peak area ratios of analytes to IS were used for regression analysis of calibration curve. Linearity was obtained over the concentration range 10-60 μg/ml for both substances. The mean % recovery ± SD was found to be 101.23% ± 1.0 and 100.69 ± 0.67 for fluoxetine and norfluoxetine respectively. The method seems suitable, in terms of accuracy and precision, for the determination of fluoxetine plasma levels of patient; furthermore, it is rapid and sensitive.

Keywords: Fluoxetine; Norfluoxetine; Precolumn derivatization; Liquid chromatography; Plasma