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Derivative spectrophotometric methods for the determination of Zolpidem Tartrate

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A simple, rapid and sensitive difference spectrophotometric method was developed for the determination of Zolpidem tartrate in pharmaceutical dosage forms. Zolpidem tartrate is a non benzodiazepine hypnotic agent binds preferentially to one benzodiazepine receptor subtype ω-1 bezodiazepine-1 thought to mediate hypnotic effects. The hypnotic actions of Zolpidem, like benzodiazepine hypnotics, are mediated at the benzodiazepine recognition site of the GABA receptor complex. Zolpidem behaves as a sleep inducer without the muscle relaxant and anticonvulsant effects of the benzodiazepines. A double beam UV-VIS spectrophotometer (UV-1800, Shimadzu) 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 this method, borate buffer solution was scanned by using phosphate buffer solution as blank. The drug solutions prepared in phosphate buffer were kept in place of reference cuvette and the difference in absorbance of the corresponding drug solutions prepared in borate buffer was recorded. The difference absorption spectrum shows maxima at 250.71 and minima at 291.31. The amplitude was recorded and a graph was plotted by taking the concentration of the solutions on the x-axis and the corresponding amplitude values on the y-axis. Zolpidem tartrate follows Beer-Lambert's law over the concentration range of 1.0-20 µg/ml (r^2= 0.999). The % RSD in precision and accuracy studies was found to be less than 2.0. The proposed method was validated and can be successfully applied for the determination of Zolpidem tartrate in pharmaceutical formulations.

Development of Ibuprofen loaded topical ethosomal formulation using factorial design approach: Drug deposition and stability

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Ibuprofen is a NSAIDS which is believed to work through inhibition of cyclooxygenage (COX); thus inhibiting prostaglandin synthesis, which is responsible for pain inducer. Ibuprofen is rapidly absorbed after oral administration and peak concentration in plasma is observed after1-2hrs. Clinically ibuprofen has a very low bioavailability, short half life ($t_{1/2}$) and hepatic metabolism and common adverse effects nausea, ulceration, bleeding, dizziness. To reduce such adverse effects, it would clearly be preferable to administer ibuprofen topical. Inspite of several advantages offered by transdermal route, only a few molecules are suitable to administer dermal and transdermal because of formidable barrier nature of stratum corneum (sc).

The present work thus, focuses on developing novel ethosomes with respect to dermal delivery of ibuprofen the possible therapy of pain reliving and exploring possible mechanism of better skin penetration of ethosomal carrier. Ibuprofen loaded ethosomes were prepared by film hydration technique and characterized for vesicular shape and surface morphology, vesicular size, entrapment efficiency, stability, surface charge(zeta potential),compatibility studies (FTIR).Scanning electron microscope and fluorescent microscope and Malvern particle size analyzer defined ethosomes as spherical, unilamellar structure and micrometric size range (1µ).% Entrapment efficiency of ibuprofen in ethsomal carrier was found to be 62.06% ±1.4.zetapotential studies explains ethosomes exhibited a negative charge of -12.3 mv.stability profile of ethosomes after 6weeks 51.45% drug was retained in the system. In vitro Skin retention studies of ibuprofen loaded ethosomes showed 87.32 %(19.285mg/cm2). So finally all these properties attributing ethosomes may offer suitable approach for dermal delivery.