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Vitamin D-2, D-3 and their 25-hydroxy metabolites in human plasma: Simultaneous quantification by high performance liquid chromatography

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A reliable high performance liquid chromatography (HPLC) assay for simultaneous determination of vitamin D-2 (VD-2), vitamin D-3 (VD-3), 25-Hydroxy VD-2 [25 (OH) VD-2], and 25-Hydroxy VD-3 [25 (OH) VD-3] in human plasma was developed and validated. The samples were precipitated with a mixture of methanol and isoproponal (9:1, v:v) and extracted in hexane. After evaporation, the residue was dissolved in acidic methanol and centrifuged. 100µl of the clear solution was injected; and separation was achieved on Zorbax C18 column. The mobile phase (gradient elution mode) consists of methanol, acetonitrile and water (pH = 3.0, with acetic acid); the eluents were monitored by photodiode array detector, with the wavelength set at 265 nm. No interference with endogenous components was observed. The relationship between the concentration of VD-2, VD-3, 25(OH)VD-2, 25(OH)VD-3 in plasma and their peak area ratio to the IS was linear over the range of 10 - 100 ng/mL. Mean extraction recoveries of VD-2, VD-3, 25(OH)VD-2, 25(OH)VD-3 from plasma samples were over 80%. The method was applied in assessing the stability of VD-2, VD-3, 25(OH)VD-2, 25(OH)VD-3 in plasma under various conditions generally encountered by clinical laboratory. The assay is suitable to study the bioavailability of vitamin D in humans.

Development of a novel oral multi particulate drug delivery system of Ropinirole by micro tablet technique

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Ropinirole Hydrochloride is an orally administered non-ergoline dopamine agonist. Ropinirole extended release tablets marketed as Requip® XL. Ropinirole is indicated for the treatment of the signs and symptoms of idiopathic Parkinson's disease. It is very soluble in all the selected media as per the Biopharmaceutical Classification System (BCS) and oral bioavailability about 50% and comes under class III drug. The production of mini-matrices using a tabletting technique is an attractive alternative to the production of pellets, as the presence of solvents is avoided, and high production yields like the ones observed in extrusion and spheronization are obtained. Furthermore, due to the manufacturing process, defined size and strengths can easily be produced, with small variability within and between batches. In the present research study a multi unit particulate drug delivery system of Ropinirole was developed by the matrix micro tablet technique. The formulation optimized on the basis of in-vitro release in phosphate buffer pH 6.8. In-vitro releases were compared with marketed formulation. A similarity factor (F2) was 86 for batch number ROP/22. The optimized formulation shows good stability at 40°C/75%RH for 6 months period. The kinetics of dissolution data analysed for kinetic equation like zero order, first order, Huguchi square root, and K-peppas equations. The kinetic equations data shows it follows Huguchi square root kinetics and the release mechanism involves anomalous transport for reference and super case II transport for optimized formulation. From this study can be concluded that Ropinirole can be formulated as multi particulate drug delivery system.