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RP-HPLC METHOD DEVELOPMENT FOR THE SIMULTANEOUS QUANTITATIVE ESTIMATION OF TOREZOLID DISODIUM PHOSPHATE, MOXIFLOXACIN, ISONIAZID, PYRAZINAMIDE AND RIFAMPICIN IN TABLETS

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ABSTRACT

A fast, simple, precise, accurate and a cost-effective RP HPLC method has been developed for the simultaneous quantitative estimation of a new antibiotic Torezolid disodium phosphate with Moxifloxacin, Isoniazid, Pyrazinamide and Rifampicin in tablets. RP-HPLC method has been developed by the detailed investigation of various parameters involved in method development such as (i) solvent strength optimization, (ii) solvent type optimization, (iii) optimization of various proportions of mixture of organic solvents with water or buffer, (iv) optimization of column parameters such as flow rate, height, diameter, nature (C18, phenyl, cyano, C8) and particle size (3, 5 and 10µ) and (v) optimization of buffer, buffer strength and pH of the buffer. Conclusions of method development included use of column as Phenomenex make Luna C18 with specifications of 250mmx4.6mm as height and diameter respectively and 5µ as particle size, mobile phase as Methanol : water = 60:40, flow rate as 1 mL/ min, temperature as 25^{o}C and a detection wavelength as 230 nm, which resulted in all the drugs eluting at different retention times as 2.15 min, 2.89 min, 4.02 min, 4.86 min and 5.18 min with a resolution of Rs ≥1.6 and a tailing factor of ≤1 and a total run time of less than 6 minutes, an indicative of fast, cost effective and a simple RP HPLC method.

Keywords: HPLC, method development, resolution factor, tailing factor.

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VALIDATED RP-HPLC METHOD AS A TOOL FOR THE ESTIMATION OF EPROSARTAN IN PHARMACEUTICAL DOSAGE FORMS

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ABSTRACT

A simple, specific, accurate, precise and sensitive Reverse Phase High Performance Liquid Chromatographic method has been developed for the quantitation of Eprosartan Mesylate in both pure and pharmaceutical dosage forms. A Phenomenex Luna 5µ C-18(2) 100A column having 250 x 4.6 mm internal diameter in isocratic mode with mobile phase containing Acetonitrile : 1% Diethyl amine : 1% Glacial acetic Acid (13:3:4v/v/v). The flow rate was 0.6 ml/min and the effluents were monitored at 242 nm. The retention time was 4.757min. The linearity was in the range of 5-20µg / ml. This method was validated for linearity, precision, limit of detection, limit of quantitation and accuracy. Statistical analysis proves that the method is reproducible and selective for the estimation of the said drug.

Keywords: HPLC, method development, resolution factor, tailing factor.

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Oxazolidinones as Antibacterial agents – An update

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ABSTRACT

Oxazolidinones represent a new, totally synthetic chemical class of anti microbial agents which has emerged after a long gap of 40 years of research in the field of antibiotics. Oxazolidinones have a unique mechanism of action in inhibiting protein synthesis, what makes oxazolidinones a special chemical class of antibiotics. Accordingly, it is postulated that cross resistance is unlikely with any other antimicrobial agents marketed now. Linezolid is the only drug under the class of oxazolidinones that has been marketed world-wide as intra-venous and oral antibiotic by Pfizer in the year 2000 and since then there exists hardly any fast follower despite huge efforts by many researchers, to troubleshoot the problems of Linezolid including myelosuppression (thrombocytopenia) when administered for more than 14 days, MAO-A/B inhibition leading to serotonin syndrome when given along with MAO inhibitors for the treatment of depressive patients, narrow spectrum of activity, bacteriostatic and emergence of Linezolid resistant MRSA and other strains. Currently it is Tedizolid phosphate and Radezolid which have successfully completed first phase 3 and two phase 2 clinical trials respectively, hoping for the new fast followers to emerge into the market shortly. This presentation focuses on the detailed review of the literature on oxazolidinones published by various national and international researchers and their efforts towards the development of an ideal oxazolidinone.

Keywords: Oxazolidinone, Linezolid, Radezolid, Tedizolid.

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A RP-HPLC Method development and Validation for the Simultaneous Quantitative Estimation of Alpha Lipoic acid (ALA) with Vitamins B_6, B_9 and B_{12} In Multivitamin capsules

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ABSTRACT

A simple, precise, accurate and rapid Reverse Phase High Performance Liquid Chromatographic (RP-HPLC) method has been developed and validated for the simultaneous quantitative estimation of Alpha Lipoic Acid (ALA) 100 mg, with vitamins Pyridoxine hydrochloride (B_6) 3 mg, Folic acid (B_9) 1.5 mg and Mecobalamin (B_{12}) 1.5 mg in multi vitamin capsules. The method uses Phenomenex Luna C18 column (250 mm x 4.6 mm, 5 µm) with an isocratic elution. Method optimized conditions include: mobile phase acetonitrile : 10 mM ammonium acetate buffer (adjusted to pH 3.5) = 70:30 v/v, flow rate of 1 ml/min, temperature at 25°C and detection wavelength of 280 nm using a UV detector. The developed method resulted in all the drugs eluting at different retention times as 2.5 min (B_{12}), 4.31 min (ALA), 3.25 min (B_9) and 4.9 min (B_6) possessing system suitability parameters as tailing (T, asymmetric factor) in the range of 0.9 to 1.1, resolution factor (Rs) ≥ 1.5, and theoretical plates (N) of >2000 along with a short run time of less than 5 minutes, an indicative of a rapid and a best RP HPLC method. This method has been validated for precision, accuracy, linearity, Limit of Detection (LOD), Limit of Quantitiation (LOQ), ruggedness and robustness as per ICH guidelines and the results were found to be in the acceptable limits. Hence, this method can be used in routine analysis in various pharmaceutical and food industries for the simultaneous quantitative estimation of ALA, B_6, B_9 and B_{12} vitamins in multivitamin capsules.

Keywords: RP HPLC, Alpha Lipoic acid (ALA), Pyridoxine hydrochloride (B_6),

Folic acid (B_9) Mecobalamin (B_{12}), Validation, Multivitamin capsules

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A RP-HPLC Method development and Validation for the Simultaneous Quantitative Estimation of Alpha Lipoic acid (ALA) with Vitamins B_1, B_6, B_9 and B_{12} In Multivitamin Tablets

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ABSTRACT

A simple, precise, accurate and rapid Reverse Phase High Performance Liquid Chromatographic (RP-HPLC) method has been developed and validated for the simultaneous quantitative estimation of Alpha Lipoic Acid (ALA) 100 mg, with vitamins Thiamine (B_1) 10 mg, Pyridoxine hydrochloride (B_6) 3 mg, Folic acid (B_9) 1.5 mg and Mecobalamin (B_{12}) 1.5 mg in multi vitamin tablets. The method uses Phenomenex Luna C18 column (250 mm x 4.6 mm, 5 µm) with an isocratic elution. Optimized method include: mobile phase acetonitrile : 10 mM ammonium acetate buffer (adjusted to pH 3.5) = 80:20 v/v, flow rate of 1 ml/min, temperature at 25^{o}C and detection wavelength of 280 nm using a UV detector. The developed method resulted in the drugs eluting at retention times of 4.5 min (B_1), 2.3 min (B_{12}), 4.1 min (ALA), 3.05 min (B_9) and 5.4 min (B_6) possessing system suitability parameters as tailing (T, asymmetric factor) in the range of 0.9 to 1.1, resolution factor (Rs) $\geq$ 1.5, and theoretical plates (N) of >2000 along with a run time of 5.4 minutes, an indicative of a rapid and a best RP HPLC method. This method has been validated for precision, accuracy, linearity, Limit of Detection (LOD), Limit of Quantitiation (LOQ), ruggedness and robustness as per ICH guidelines and the results were found to be in the acceptable limits. This method can be used in routine analysis in various pharmaceutical industries for the simultaneous quantitative estimation of ALA, B_1, B_6, B_9 and B_{12} vitamins in multivitamin tablets.

Keywords: RP HPLC, Alpha Lipoic acid (ALA), Thiamine (B_1), Pyridoxine hydrochloride (B_6), Folic acid (B_9), Mecobalamin (B_{12}), Validation, tablets