1- EFFECT OF ATROPINE SULFATE OINTMENTS AND GELS ON THE INTRAOCULAR PRESSURE OF RABBIT'S EYE

Atropine sulfate has been formulated in ointments and gels using absorption base, hydrocarbon base, water soluble base, polyvinylpyrrolidone gel and sodium carboxymethylcellulose gel. The release behaviour of the drug and the effect on intraocular pressure of rabbit’s eye have been estimated. The results revealed that, the release of atropine sulfate was in the following order, polyvinylpyrrolidone gel > polyethylene glycol > sodium carboxymethylcellulose gel > lanolin-petrolatum > hydrocarbon base. However the maximum effect of drug on intraocular pressure was maintained within three hours in the following order, sodium carboxymethylcellulose gel < hydrocarbon base < polyethylene glycol base < polyvinylpyrrolidone gel < lanolin - petrolatum base.

2- EFFECT OF VEHICLE COMPOSITION ON BIOAVAILABILITY OF ATROPINE SULFATE IN RABBITS EYES

The effect of vehicle composition on ocular disposition of atropine sulfate was studied using different ophthalmic drops, ointments and gels on rabbit’s eyes. The bioavailability of the drug in eye tissues showed that, their distribution were greatly affected by the type of the vehicle. In addition, the uptake by different eye tissues was variable. The peak time of atropine sulfate was found to be 2 hours for ophthalmic drops and 3 hours in case of ointments and gels. The total bioavailability of atropine sulfate in eye tissues of rabbit and aqueous humor after 2 hours were 4350, 4010 and 3675 ugm/gm using aCMC, PVP and PEG ophthalmic drops. While that from ointments and gels after 3 hours were 4 355,4 320,4255 and <205 ugm/gm for PVP gel, PEG base, hydrocarbon base and NaCHC gel respectively.

3- FORMULATION AND STABILITY OF ATROPINE SULFATE EYE DROPS

Atropine sulfate was formulated in ophthalmic solutions using Methyl cellulose, Sodium carboxymethylcellulose, polyvinyl alcohol, polyethylene glycol 6000 and polyvinyl-pyrrolidone K7r. The formulations were subjected to stability studies. The obtained results revealed that, no degradation or complexation occur among the tested preparations with the exception of that contained methylcellulose. A significant increase of drug content and viscosity of the solution was beginning after storage for the first month. Furthermore, the degradation in drug concentration was reached more than 90% after storage at 70°C for two years. Also TLC revealed a chemical decomposition of atropine sulfate in me thy I cel I u os?e ?ol lit ion.

4- Formulation and Preparation of Ketoprofen Tablets Using Interpolymer Complexes Techniques

The application of interpolymer complexes (IPCs) for oral controlled drug delivery systems was tried between Eudragit E 100 and various anionic polymers viz. sodium alginate, sodium carboxymethylcellulose and pectin. The prepared interpolymer complexes were investigated using Fourier transform infra-red spectroscopy and differential scanning calorimetry. The stoichiometric ratios of Eudragit E with the anionic polymers were determined by measuring the viscosity at different pH values. Ketoprofen tablets were prepared using polymers alone, physical mixtures of Eudragit E with sodium alginate, sodium CMC or pectin in different ratios 1:3, 1:1 and 3:1, and the corresponding interpolymer complexes of these polymers. Evaluation of the prepared tablets including weight variation, thickness, content uniformity, friability percent, and in-vitro release studies using 0.1 N HCl and phosphate buffer of pH 7.4 as dissolution medium were performed. The tablets showed an acceptable physical properties and the dissolution rate data were found to be dependent on the type of IPC, the physical mixture of Eud. E and each of the anionic polymers and also on the pH of the dissolution medium. Eudragit E - sod. CMC physical mixture 1:1 and Eud. E - sod. CMC IPC were selected for the in-vivo study in rabbits. The results showed a lower peak plasma concentration and marked sustained release effect compared to the control tablets.

5- RELEASE CHARACTERISTICS OF SALUZIDE FROM SUPPOSITORY BASES

summary:
Saluzide suppositories vers, prepared using Witepsols \^\^Buethylens (PEG) bases. The physiochemical-|x :::J release behaviour of drug from the prepared suppo-|nties wer?. investigated. The data of release of drug I Hi anai:.-:--: : ? • • • : : -.rder of kinetics. I HI: was four:. vie r-j le use of saluside from wi zepso-s Wlcuer than that from PEG. :>. addition the rate of re-mm -JUS found zo be diffusion controlled from the fatty IBI.
however, the first order kinetic fitted the release Wing suc-.ositories prepared using PEG

6- CAL STABILITY OF THIAMINE HYDROCHLORIDE AND 5 FLW\RATE IN TABLETS PREPARED BY DIRECT AND WET GRANULATION TECHNIQUES

ABSTRACT
- chemical stability of thiamine hydrochloride and wfwncrate in tablets prepared by direct granulation Its vising Span 40, stearic acid or PEG 6000 as gran-agents were studied in comparison with those pre-ifret granulation technique. Batches of tablets id good physical and mechanical properties were for this study. The stability testing was carried 5 and 95% relative humidity at two temperature and 45°C. The results obtained revealed that, iOf degradation of either thiamine hydrochloride us fumarate was increased as the relative humidity erature were increased. In case of thiamine hydro-i tablets, the highest stability data were obtained bleis prepared with stearic acid followed by those tith PEG 3000. In case

7- APPLICATION OF FACTORIAL DESIGN OF EXPERIMENTS TO PREDICT THE CHEMICAL STABILITY OF FERROUS FUMARATE AND THIAMINE HYDROCHLORIDE TABLETS

ABSTRACT
In this investigation factorial design of experiment of the type N = 2^ was applied to predict the chemical stability of ferrous fumarate and thiamine hydrochloride in tablets prepared by direct and wet granulation techniques, using Span 40, stearic acid and PEG 8000 as granulating agents. The quantitative factors were the temperature, humidity and time, corresponding to the accelerated storage conditions which are 52% and 95% relative humidity at two temperature levels (25° and 45°C). The effect of the three operating factors and their interactions on the stability of both drugs as well as the derivation of imperical regres-sion equations were determined. The derived regression equations have the ability to predict the chemical stability of ferrous fumarate and thiamine hydrochloride tablets at any particular conditions within the limits specified. In addition, the coefficients of the factors and their inter-actions were found to have negative signs, which indicated that the effect of each factor was dependent on the level of the other two factors. The obtained results revealed that, there was very good agreement between the predicted and the experimental data obtained from the classical design of the experiments, carried out under the specified storage conditions. The reaction rate constants and tan,, of ferrous fumarate and thiamine hydrochloride tablets determined from

8- EFFECT OF STRESS STORAGE CONDITIONS ON THE PHYSICAL CHARACTERISTICS AND DISSOLUTION PROFILES OF THIAMINE HYDROCHLORIDE AND FERROUS FUMARATE TABLETS

ABSTRACT
The aging of thiamine hydrochloride and ferrous fumarate tablets prepared by direct and wet granulation tech-ique using span 40, stearic acid or PEG 6000 as granule-ting agents were studied under four sets of storage cond-
tions (52% and 95% relative humidity at 25° and 45°C). The physical properties and dissolution profiles of the tablets were evaluated periodically over 6 months. The results obtained revealed that, there was a marked increase in tablet weight, friability and disintegration time; while a significant decrease in hardness and dissolution rate was observed in all tablet formulations under all the selected storage conditions. At 95% RH, thiamine hydrochloride tablets prepared with span 40 or PEG 6000 were swelled or completely deformed after 2 months. These results pointed out that the tested tablets should be protected from moderate and higher temperature", and humidity in order to maintain acceptable product quai lity throughout their shelf life.

9- TN-VTPO AND TN-VTVO EVALUATION OF SUSTAINED RELEASE FLOCTAFENINE GRANULES

Abstract: Sustained release floctafenine granules contain^ stearic acid and glyceryl monostearate (matrix) were prepaid using fusion, solvent evaporation or melt granulati* techniques. The effect of Aerosil, Avicel, Emcompresa U sodium chloride as channeling agents on the in vitro relt of floctafenine was investigated. The results obtain revealed that, granules prepared by fusion method achim sustained release pat terns chan those prepared by the techniques. Moreover, ail the selected channeling t increased the extent of drug release but with different ti depending upon their concentration and nature. The re of drug was found to follow the Higuchi model with gr containing 0 and 5% channeling agents while it folio* first order kinetics with chose containing 201. li studies in humans revealed that the urinary excreti floctafenine from the tested granules occurred OV sustained period from 3 to 10 hr.

10- FORMULATION AND RELEASE CHARACTERISTICS OF PHENYLEPHRINE HYDROCHLORIDE SUPPOSITORIES

ABSTRACT
Phenylephrine hydrochloride supposiCories were formula-
ted using Witepsols ^35 aa^75 each alone or in
combinations of two in different ratios of 1:1, 1:2 and 2:1. The prepared suppositories were evaluated for their mechanical properties, release characteristics and drug partitioning using different bases and water. The obtained results revealed that the prepared suppositories exhibited good mechanical properties and different characteristics. The partition coefficient of the drug was found to be in a good correlation with its release profiles from the corresponding bases. Witepsol either alone or in combinations with £ or H, in a ratio of 2:1 (W35: ffl or H^n) were found to be the bases of choice for formulating phenylephrine hydrochloride suppositories referring to their good mechanical properties and high release characteristics. The bioavailability of the drug after rectal administration in rabbits was greater with Witepsol W.,... over Witepsol H^<cl if, o and H15+W35 (1:2). A highly significant in-vivo - in-vitro correlation existed.

11- EFFECT OF COPRECIPITATING SOLVENT AND POLYMERS ON THE DISSOLUTION BEHAVIOUR OF SPIRONOLACTONE TABLETS

**ABSTRACT**

Spironolactone (SP)/PVP binary coprecipitates were prepared by solvent method using ethanol and chloroform. Ternary drug: PVP: Avicel systems was prepared by deposition of the drug/PVP coprecipitates on Avicel surface as veil by mixing the drug/PVP coprecipitates with Avicel in a mortar. The powder of the prepared mixtures were tested by x-ray diffractometer. Also, tablets made from certain ratios of drug/PVP coprecipitates and exposed to the dissolution median were examined by x-ray diffractometer. The dissolution of drug from binary coprecipitates and ternary systems was performed from constant surface tablets. The solubility of spironolactone was determined at 37°C in solutions containing various concentrations of PVP. Spironolactone form a 1:1 drug/PVP complex. The drug dissolution rate from drug/PVP coprecipitates prepared from chloroform was higher than that prepared from ethanol. The dissolution rate pattern of the two coprecipitates with respect to PVP concentration in the tablets was different. The drug dissolution rate from ternary systems was dependent on the method of preparation and the ratios of drug: PVP; Avicel in the tablets.

12- EFFECT OF BINARY AND TERNARY SYSTEMS ON THE PHYSICO-CHEMICAL PROPERTIES AND DISSOLUTION RATE OF SPIRONOLACTONE

**ABSTRACT**

Spironolactone (SP) was coprecipitated with both B-cyclodextrin (B-CD) and PVP. Ternary systems of drug: PVP: B-CD were also prepared by four different methods: 1- Drug: B-CD coprecipitate mixed with PVP, system (A) , 2- Drug: PVP coprecipitate mixed with B-CD, system (B) , 3-flash evaporation from 50% ethanol, system (C), and 4-Deposition of drug: PVP on B-CD, system (D) . All systems were evaluated by powder X-ray diffraction, DSC, IR and dissolution from tablets. The results revealed that the drug crystal peaks disappeared at ratio exceeds 1:4 SP: B-CD coprecipitates and two broad peaks (attributed to inclusion complex) appeared. The flash evaporated ternary systems showed the amorphous form of the drug. The drug dissolution rate from 1:6 binary drug: Polymer was in the following order; drug: PVP (chloroform > drug: B-CD > drug: PVP (ethanol). The dissolution rate of the drug was enhanced using the ternary systems and this enhancement was found to be dependent on the polymer type, solvent of coprecipitation, method of preparation, and the ratio of each polymer in the system. The results of ternary systems were compared to that of binary coprecipitates.

13- Ocular Bioavailability of Triamcinolone Acetonide Complex from Different Ophthalmic Preparations in Rabbits’ Eyes

Objectives: The effect of beta-cyclodextrin (β-CyD) on the solubility, release characteristics and ocular bioavailability of triamcinolone acetonide (TA) from ophthalmic gels and ocuserts were investigated.

Methods: Triamcinolone acetonide-β-CyD complex was prepared by kneading method in a molar ratio of 1:1. The ophthalmic gels [carbopol 934, hydroxy propyl methyl cellulose (HPMC), sodium alginate] and ocuserts (HPMC and carbopol 934 combination, sodium alginate and carbopol 934 combination) were prepared using 0.1% of the drug or its equivalent amount of complex with β-CyD. The in vivo study was performed on male albino rabbits. The drug concentrations were determined in different eye tissues and aqueous humor of the rabbits after 1, 2, 4, and 6 hr of the application by HPLC method.
Results: The obtained results revealed that, the solubility of TA was increased linearly as a function of CyD concentration following AL type phase solubility diagram. The percent released of the drug from the prepared formulations containing TA untreated could be arranged in the following order; HPMC and carbopol 934 combination ocucrets > sod. alginale and carbopol 934 combination ocucrets > HPMC gel > carbopol 934 gel > sod. alginale gel. Moreover, at all time intervals, the percent released of the drug from ophathmic gels and ocuerts containing the drug complex with CyD was significantly higher than that of the untreated drug. Concerning the ocular bioavailability, all tested formulations provided the highest Cmax of the drug in conjunctiva followed by cornea, iris-ciliary body, conjunctiva and then the aqueous humor. The peak time of maximum drug concentration (Tmax) in rabbits’ eye tissues and aqueous humor was 4 hr for all ophthalmic gels and ocuerts.

Conclusions: The total ocular bioavailability of triamcinolone acetonide was improved when the drug was complexed with b-CyD.
Pharmaceutical studies on formulation and Evaluation of some solid Dosage Forms containing certain Drugs

Formulation and Evaluation of Some tinidazole preparations Containing Certain bioadhesives

Preparation and Evaluation of Controlled Release Formulations Containing Certain Drugs by Using Natural Carriers

Pharmaceutical study on some Insoluble Drug - Polymer combinations