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POSTER PRESENTATIONS
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BPK/PD SESSION

Formulation, Physicomechanical And Biopharmaceutical Characterization of A Solid Oral Medicinal Form Containing Ethylester of The Apovincaminic Acid (Vinpocetine)

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Comparative physicomechanical and biopharmaceutical studies are carried out on medicinal forms, created by different technological approaches: Vinpocetine tabl. X 5 MGK NIHFI and a standard preparation. A method is elaborated for analytical characterization of the medicinal form created in NIHFI.

The values of the studied parameters of the ready, chosen by screening medicinal form Vinpocetine tabl. X 5 MGK NIHFI are analogous to those of the standard.

The study makes it possible to formulate a composition of a solid oral medicinal form containing ethylester of apovincaminic acid- optimal regarding physicomechanical and biopharmaceutical parameters.

Biopharmaceutical Investigations And Standardizing of Solid Oral Dosage Form With Levamisole Hydrochloride

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Compositions of solid oral dosage form with Levamisole hydrochloride and excipients differing in quality and quantity are tested. Screening test is carried out concerning following indices:

- mass uniformity
- hardness
- disintegration
- friability

A composition of a solid oral dosage form, which is optimal with respect to the investigated physicomechanical properties is chosen.

The aim of this study is biopharmaceutical "in vitro" characterization of levamisol tablets of 50 mg and determination of properties for standardizing the medicine.

A method for analytical characterization of the oral dosage form created in the Chemical Pharmaceutical Research Institute is developed. The identification of the active substance is made by UV-spectrophotometry and by thin layer chromatography. The last one is used for the determination of the organic impurities. The method of dissolution and the specification correspond to the requirements of USP 23 (Levamisole Hydrochloride tablets). The assay of the active substance in the tablets is made UV-spectrophotometrically at 214 nm.

The developed methods are validated. They are used for the standardization of the above dosage form as well as in its quality control.

In Vitro Biopharmaceutical Characterization of Water-Free Disperse Systems With Nifedipin

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The influence of type of disperse media and excipients on in vitro biopharmaceutical properties of water-free disperse system for soft seamless gelatin capsules was investigated. Experimental data obtained from dissolution tests were interpreted by Weibull function. The most perspective formulation, in which nifedipin was dissolved in mixture of polyethylene glycol 400 and 1,2 propylene glycol and incorporated by Aerosil R 972 in sunflower-seed oil, was carried out on the base of calculated kinetic parameters T_d and β.

Pharmacokinetic Analysis of The Drug Glycyrram

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Glycyrrhiza glabra is the national natural sources of Azerbaijan. It is used in medical practice as universal medicine plant for treatment of different pathology. In officinal medicine drug of Glycyrrhiza glabra: Glycyrramum, Flacarbinum, Sirupi Glycyrrhiza glabra used as immunostimulation, antiinflamation, broncholitic, wound healer.

It had been obtained several pharmacology active substances from Glycyyrhiza glabra. Monoammonic salt of acidi glycyrrhizinic – Glycurram is obtained by extraction of radix Glycyrrhiza glabra with $(NH_4)_2CO_3$ by active mixing during 4-5 hours.

By using common methods, acidi glycyrrhinici is taken by acetone (at high temperature). During mixing procedure, we take 25% NH_4OH. After separating acetone. It is cultivated by cold CH_3COOH and filtrated. After that, we crystallized by C_2H_5OH and obtained Glycyrram.

Entrance-6,2%, Brootto-formul – $C_{42}H_{65}NO_{16}$.T = 202-204°C. LD_{50}= 1175 MGK/kg.

It has carried out pharmacokinetic analysis of this preparation at white mice. We administered this preparation with the dose of 0.05% (aqueous solution of the extract containing 1 mg of the active substance). We determined the concentration of the active substance in blood and urine after 3, 6, 12, 24, 48, and 72 hours. It is proved that the preparation is metabolized in the body to $C_{42}H_{65}NO_{16}$. The metabolite obtained with one molecule of $C_6H_9O_7$ (acidi glucuronici) is $C_{30}H_{40}O_4$ (acidi glycirretici).

Pharmacodynamic Studies On The Novel Xanthone Derivatives

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Previously, it has been shown the antiarrhythmic activity and hypotensive action of 2- and 4-[[amino-(hydroxy)-propoxyl] xanthone derivatives with amine groups in the adrenaline model of arrhythmia. The amine groups such as isopropyl-amine, t-butylamine or 4-piperazine substitutes appear in many known antiarrhytmic and hypotensive drugs (e.g. Naftopidil). In this study, the effect of the amine derivatives of xanthone was evaluated in animal models of arrhythmia induced by strophantine and calcium in rats according to Szekers. All the studied compounds diminished the heart rate from 10-35% and lengthened the duration of the P-Q section, the QRS complex and the Q-T interval in the statistically significant way ($p<0.001$). The most active one in this respect was the compound coded HM-3 in a dose of 18 mg/kg. In the strophantine model of arrhythmia beneficial antiarrhytmic effects revealed the HM-5 compound in a dose of 4 mg/kg and the HM-3 in doses of 4 and 8 mg/kg in comparison to control. In the calcium model of arrhythmia the antiarrhythmic action of all the studied compounds was much weaker and did not reach the statistical significance. Taking into account the previous and the present results in models of antiarrhytmia and the clear hypothensive effect of the studied compounds it seems that the pharmacological mechanism of their action is connected with the influence on α- and β-adrenoceptors and chinidine – like properties.

Drug Release From Biodegradable Cross-linked Microspheres of Malic Acid

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Biodegradable cross-linked microspheres were obtained in a polycondensation reaction between R,S-malic acid and the model drugs (Vephylline and Antistenocardin). The investigations show, that the obtained biodegradable cross-linked drug systems ensure sustained release for a prolonged period of time (t_{90} > 90 h). The drug release is characterized by two parallel processes- hydrolysis to water soluble oligomers and subsequent hydrolysis leading to the release of pure drug.

The factors influence on the drug release from biodegradable microspheres have been studied.

It was found that the pH value of the eluent was the most important factor, because of the specificity of the hydrolysis process, which was the underlying factor promoting drug release.

Predicting Pharmacokinetic Parameters of Compounds: The Initial Result of A New Method

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Within the pharmaceutical and agrochemical industries, there is a general need to be able to estimate the rate at which molecules penetrate through the gastrointestinal tract. It is important both from the standpoint of estimating clinical effectiveness and also toxicological risk. When drugs are designed for systemic effects, it is useful to know what are the possible pharmacokinetic parameters and what effect different functional groups have on the overall absorption through the gastrointestinal tract, without doing any in vivo experiments. In the design of oral administered drugs, it is also useful to know their absorption characteristics, so that systemic delivery can be maximized or optimized. Equally, in the design of new pesticides, molecules are required, which are active, but not well absorbed through the gastrointestinal tract. Performing pharmacokinetic studies and in vivo experiments need quite extensive work and some permissions from the ethical committee or authorities; it is also quite expensive.

The objective of this work is the prediction of some pharmacokinetic parameters of compounds for oral absorption solely from its molecular structure and properties.

The log octanol/water partition coefficient (log Koct) and solubility (δ) parameters (ΔH: sum of the energy of mixing of substituents constant, Δv: sum of the molar volume of the substituents constants), molecular weight (MW) and dipole moments (dpm) were used as predictors. The statistical analysis were performed and quite good correlations were found. The final prediction equations are:

$Kd = 0.295 + .0737\ dpm - 0.000007\ \Delta H$
$r^2 = 86.7\%$ r^2 (adj.) = 83.8 %
AIC = –39.6 $S_r = 0.0514$ n = 12

Bioavailability % $= -29.2 + 10.5\ \log K_{oct} + 0.250\Delta v$
$r^2 = 75.7\%$ r^2 (adj.) = 70.2 %
AIC = –96.7 $S_r = 15.08$ n = 12