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The Study of the Authenticity of Ketoprofen by the Thermodoserpion Surface Ionization Spectroscopy Method

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Abstract: This article provides information on medicinal properties of Ketoprofen, its use in medicine and pharmaceuticals, limits of action, chemical composition. An experiment to determine the authenticity of Ketoprofen is presented, the special apparatus and the conditions in it are explained in detail. In different countries of the world, information about the different use of this medicinal substance has been collected.

Key points: Antinociceptive activity, PII-N-S Iskovich-1, spectroscopic analysis, thermogravimetric analysis, thermodesorption spectrum, high sensitivity.

INTRODUCTION

Ketoprofen, a potent anti-inflammatory, analgesic and antipyretic drug belonging to the propionic acid class, was synthesized in 1968. Ketoprofen is a nonsteroidal anti-inflammatory drug (NSAID) used to treat pain or inflammation caused by arthritis. Ketoprofen regular capsule is also used to treat mild to moderate pain or menstrual pain. Only ketoprofen extended-release capsules are used to treat arthritis. This form of ketoprofen does not work fast enough to treat acute (immediate) pain. Fast absorption, normal metabolism, faster crossing of the blood-brain barrier and high antinociceptive activity are responsible for its high use.

Some products that may interact with this drug are: aliskiren, ACE inhibitors (such as benazepril, lisinopril), angiotensin II receptor blockers (such as losartan, valsartan), cidofovir, corticosteroids (such as dexamethasone, prednisone), lithium, methotrexate, "water pills" (diuretics such as furosemide)[1].

METHODS.

In today's pharmaceutical practice, creation of sensitive as well as local methods is the need of the hour. Based on this, we set out to create a method of truth analysis of Ketoprofen drug with high sensitivity thermodesorption surface ionization spectroscopy.

The method of thermodesorption surface ionization spectroscopic analysis is widely used in the practice of our republic's laboratories. The surface ionization indicator PII-N-S Iskovich-1 was used for thermodesorption surface ionization spectroscopic analysis of the drug rifampicin. Thermodesorption surface ionization spectroscopic analysis of rifampicin drug was carried out under the following conditions:

- emitter oxidized molybdenum with iridium input,
- emitter voltage 405 V,
- emitter temperature 390 – 420 (C,
- evaporation temperature is 505 (C,
- air flow 50 l/h (compressor voltage 12 V)
- the volume of the tested sample taken for analysis - 1.0 µl;
- analysis duration - 3 minutes.
- the recording of the spectra was performed directly using a computer program.

For this, 0.01 mg (a.t.) of standard rifampicin was weighed, placed in a 10 ml measuring flask and dissolved with 96% ethyl alcohol. The volume of the prepared solution was diluted with 96% ethyl alcohol. Ketoprofen 5 µg/ml standard solutions were prepared from this solution, 1 µl amount was put into the cylindrical cavity of the evaporator tape using a micro syringe, and thermodesorption spectra of ketoprofen were taken.

Ketoprofen is an odorless and tasteless, non-irritating powder. It is soluble in ether, ethanol, octanol, diisopropyl ether, acetone, chloroform, methanol, dimethylformamide and ethyl acetate. A differential thermal analysis (DTA) thermogram of ketoprofen shows an endotherm at 96°C at a heating rate of 5°C per minute and a sample size of 4 mg in a static air atmosphere, indicating melting. Thermogravimetric analysis (TGA) thermogram of ketoprofen at a heating rate of 2 °C per minute[2].

RESULTS.

According to the results of the experiment, the appearance of a linear peak characteristic of ketoprofen was observed in the temperature range of -268.5±15°C and -305.77±15°C. The obtained thermodesorption spectrum was recorded in the data bank of the computer as a reference spectrum. Using the results of the analysis, it was experimentally confirmed that ketoprofen gives the same spectra as the standard sample when analyzing the solutions obtained from the drug and drug forms. (See Picture 1, 2).

(Picture 1)

(Picture 2)

Ketoprofen has a short half-life, simple metabolism and a wide therapeutic window, and does not accumulate at high doses. These properties contribute to a rapid onset of action, flexible dosing, and a reliable tolerability profile[3].

It has a molecular weight of 254.3 and is a white or almost colorless fine powder that is almost insoluble in water. The pharmacodynamic properties of ketoprofen were determined by Julou et al. (1976). Ketoprofen, depending on the country, can be prescribed as: (a) 25, 50 or 100 mg hard capsules; (b) suppositories containing 100 mg; and (c) vials of 50 or …[4].

DISCUSSION.

Photoallergy is due to a cellular hypersensitivity reaction involving immunological reactions. Therefore, it occurs only in previously sensitized individuals and requires a latency period of sensitization. Among NSAIDs, the main drug involved in this photoallergic contact dermatitis is ketoprofen. Cross-sensitivity reactions may also occur with tiaprofenic acid, fenofibrate, or other arylpropionic acid derivatives such as oxybenzone-containing benzoyl ketone or benzophenone. The high frequency of such negative reactions with ketoprofen may be related to its chemical structure and the variety of chemical reactions that cause phototoxic effects. Widespread and repeated use of these agents can lead to sensitization, which increases the risk of systemic allergic reactions with oral NSAIDs or other drugs that cause interactions[5].

CONCLUSION.

Based on the above materials, the following conclusion can be made. Based on the chemical composition of the drug Ketoprofen, the scope of action, its main importance in medicine and pharmaceuticals, and the high sensitivity of PII-N-S Iskovich-1 were analyzed. Sufficient information has been disseminated in this regard. Research on Ketoprofen, main medicinal properties were discussed in detail.

REFERENCES:

1. https://www.webmd.com/drugs/2/drug-5995-8186/ketoprofen-oral/ketoprofen-oral/details
2. Gary G Liversidge. *Analytical profiles of drug substances 10, 443-471, 1981*
3. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy 6 (3), 93-102, 1986.*
4. JN Tamisier. *Clinics in Rheumatic Diseases 5 (2), 381-391, 1979*
5. Haleh Bagheri, Virginie Lhiaubet, Jean Louis Montastruc, Nadia Chouini-Lalanne *Drug safety 22, 339-349, 2000*