Asian Journal of Research in Social Sciences and Humanities
ISSN: 2249-7315 Vol. 11, Issue 11, November 2021 SJIF 2021 = 8.037
A peer reviewed journal

THE DEVELOPMENT OF ANALYTICAL CONDITIONS OF LEVAMIZOLE BY THERMODESORPTION SURFACE IONIZATION SPECTROSCOPY

Usmanalieva Zumrad Uktamovna*; Abdugaffarov Mukhtar**

*Tashkent Pharmaceutical Institute,
Tashkent, UZBEKISTAN
Email id: usmanalieva1970@mail.ru

**Tashkent Pharmaceutical Institute,
Tashkent, UZBEKISTAN

DOI: 10.5958/2249-7315.2021.00230.6

ABSTRACT

Analysis conditions of levamizol in thermodesorption surface ionization spectroscopy method were developed. The quantitative analysis of levamizol's TDS spectra by spectroscopy method was carried out on the basis of a calibration graph drawn on the basis of standard sample solutions with a specific concentration.The linear range of determinations for levamizole of the method is 50-100 mcg, and the sensitivity is 10 mcg.

KEYWORDS: *Levamisole, helminths, TDS spectra, Iskovich-1, thermodesorption.*

INTRODUCTION

Levamizole, one of the imidazole derivatives, has a selective effect on helminths.It is used as a remedy against ascaridosis, which occurs in human guts.Levamizole paralyzes helminths, removes muscle depolarization gel, additionally inhibits fumaratreduktase and disrupts the bioenergetic processes of helminths.Paralyzed helminths are excreted from the human body through the intestines for 24 hours. Levamizole also has an immunomodulatory effect, normalizes the immunity of cells.It has a complex effect on the immune system: it increases the production of antibodies against various antigens, acts on T-cells, acts on t-lymphos FA and accelerates their reproduction, increases the functions of monocytes, macrophages and neutrophils **[1,2].**

As noted above, it is possible to observe in the literature that the antihelminthic and immunomodulatory effects of levamizole are more widely used and cases of poisoning caused by improper application.When using the drug incorrectly, the following side effects occur: on the digestive system: salivation, vomiting, pain in the abdomen, diarrhea; on the cardiovascular system: bradycardia, collapse; on the respiratory system: difficulty breathing, tachypnosis; miosis on the nervous system (narrowing of the pupil of the eye), convulsions, depression. In cases of acute poisoning from the drug, death may occur within 1 hour after taking levamizol, due to a lack of breathing.Symptoms of intoxication from levamizole can be observed for 5 to 15 minutes.Considering that the literature does not provide enough information on the methods of chemical-toxicological analysis of levamizol, it was aimed at developing sensitive, rapid methods of analysis for the detection of levamizol.

Methods and materials:

Surface ionization indicator the name of PII-N-S "Iskovich-1" recommended by the Institute of Electronics named after U.A.Orifov of the Academy of Sciences of the Republic of Uzbekistan is used in the spectroscopic analysis of levamisole thermodesorption surface ionization.The essence of the method is based on the fact that the temperature of the substance molecules is programmed or vaporized and their surface ionization is recorded in the form of thermodesorption spectra in the

deta **[3].** The spectroscopic analysis of levamizole thermodesorption surface ionization is carried out under the following conditions:

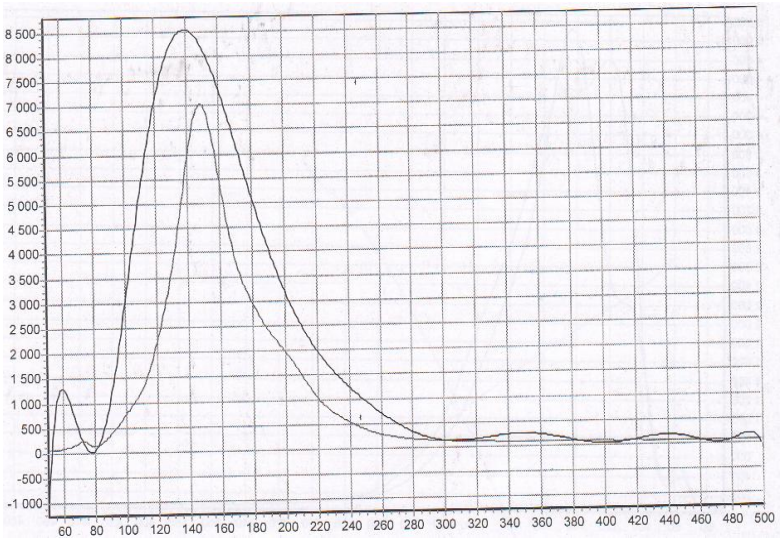
- Emitter-iridium oxidized molybdenum,
- Emitter voltage - 405 V,
- Emitter temperature - 390 - 4200S,
- Evaporation temperature - 5050 C above room temperature,
- Air flow - 50 l / h (compressor voltage 12 V)
- The volume of the test sample taken for analysis - 1.0 μl;
- Duration of analysis -3 minutes.

Spectrum recording is done directly using a computer program.

Determination of the authenticity of substances (standard method) is carried out according to the effective desorption temperatures.The comparison of the separation from the biological sample with respect to any substance is carried out using a comparison of the obtained spectrum with the ethalon spectrum in the computer data bank. Levamizole 0,01 gr tartar is dissolved in 95% ethyl alcohol in a measuring tube with a volume of 100 ml and is delivered with 95% ethyl alcohol until the volume mark.From the same solution, a working standard solution of levamizole 100 mcg/ml is prepared, using a microcomputer, in the amount of 1 mcl is inserted into the cylindrical recess on the vaporizing tape of PII-N-S "iskovich-1" apparatus and levamizole's thermodesorption surface ionization spectrum is obtained **[4].**

The resulting thermodesorption spectra are recorded to the computer's data bank as a benchmark spectrum.

Results. In spectroscopic studies of thermodesorption surface ionization of levamizole, its 95% solution in ethyl alcohol is observed to form a linear peak of ~139 ± 10°C. (Figure 1).



Abssissa line buoyant emitter temperature (T), 0S; ordinate line buoyant current value (I), A.

Figure 1.TDS spectra obtained at different concentrations of levamisole

The quantitative analysis of levamizole by the method of TDS spectroscopy is carried out on the basis of a calibration graph drawn on the basis of standard sample solutions with a specific concentration. In the composition for drawing up the calibration line 50; 60; 70; 80; 90; 100 the standard sample of mcg/ml levamizole is introduced into the cylindrical recess in the vaporizer

tape of the apparatus "iskovich-1", using a microsprise from 95% ethyl alcohol solutions, in which it is stored, and the analysis is carried out under the above conditions.Their average values (levamizole ~139 ± 10°C on the peak account) are calculated and the calibration line is drawn.The results of the analysis are presented in Table 1 and Figure 2.

TABLE 1 THE RESULTS OF THE STUDY OF THE LINEARITY OF DEVELOPED TD SPECTROSCOPIC ANALYSIS CONDITIONS (LEVAMIZOL ~139 ± 10°C, N=5)

Erythema concentrations, mcg/ml	TD spectrum height (current strength value ($Ix10^{-12}A$)
50	1231,2
60	2995,1
70	4896,3
80	6797,4
90	8564,2
100	10539,7

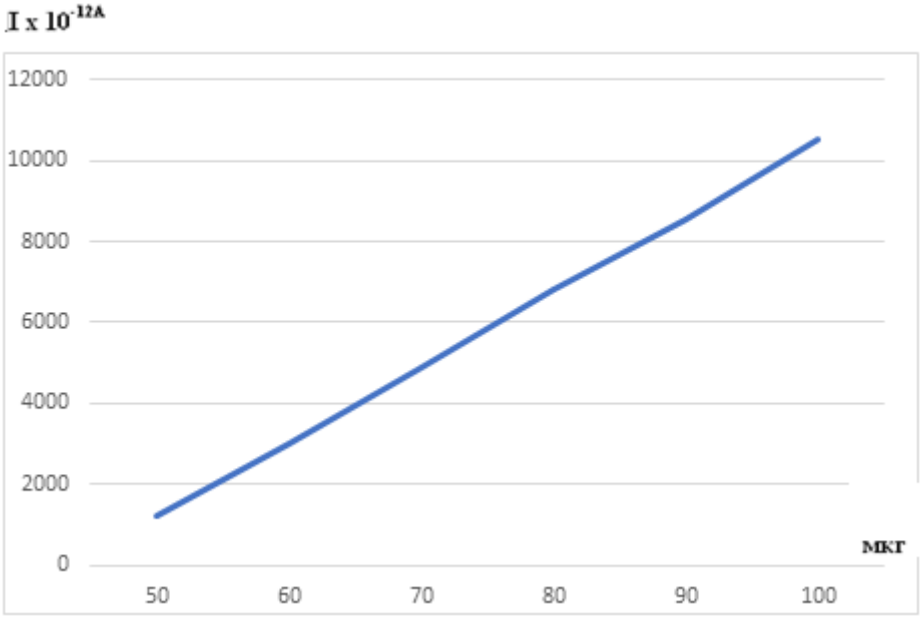


Figure 2. TDS spectra of levamizol is a graph of the dependence of the peak height on theconcentration of the solution under the conditions of spectroscopic analysis

The linear range of determinations for levamizol of the method is 50-100 mcg, and the sensitivity is 10 mcg.

CONCLUSIONS:

Analysis conditions of levamizol in thermodesorption surface ionization spectroscopy method were developed.The quantitative analysis of levamizol's TDS spectra by spectroscopy method was carried out on the basis of a calibration graph drawn on the basis of standard sample solutions with a specific concentration.The linear range of determinations for levamizole of the method is 50-100 mcg, and the sensitivity is 10 mcg.

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