The American Journal of Medical Sciences and Pharmaceutical Research
(ISSN – 2689-1026)
Published: October 31, 2020 | **Pages:** 151-155
Doi: https://doi.org/10.37547/TAJMSPR/Volume02Issue10-23

IMPACT FACTOR
2020: 5. 286
OCLC - 1121105510

Learning Bioavailability Of "Diabderm" Ointment With Method Of "In Vitro"

Khusenova Shakhnoza Shukhratovna
Department Of Industrial Technology Of Medicines, Tashkent Pharmaceutical Institute, Tashkent, Uzbekistan

Fayzullaeva Nodira Sultanovna
Department Of Industrial Technology Of Medicines, Tashkent Pharmaceutical Institute, Tashkent, Uzbekistan

ABSTRACT

In diabetes mellitus, a small focus of infection causes significant gangrene of the foot due to thrombosis of the peripheral and central vessels of the fingers. In 35–40% of patients with diabetes mellitus, isolated gangrene of several fingers is noted, and in 20–25% - only one finger. Gangrene of the foot can be dry or with a predominance of anaerobic-non-clostridial infection. Some patients have necrosis or gangrene of certain areas of the skin of the foot or lower leg. The main goal of diabetic gangrene treatment is to keep the areas of wet skin necrosis dry.

KEYWORDS

Diabetes, anti-inflammatory, "Diabderm", boric acid.

INTRODUCTION

There are currently over 400 million diabetes patients worldwide (WHO statistics). According to the analysis, by 2030 this figure may exceed 550 million. In Uzbekistan, 230 thousand people with the disease are registered.

Asia has the highest prevalence of diabetes in the population: exactly 56 percent. The problems associated with this disease and its treatment is also relevant in Uzbekistan. Therefore, employees of the Tashkent Pharmaceutical Institute use local plant materials with anti-inflammatory, anti-

The American Journal of Medical Sciences and Pharmaceutical Research
(ISSN – 2689-1026)
Published: October 31, 2020 | **Pages:** 151-155
Doi: https://doi.org/10.37547/TAJMSPR/Volume02Issue10-23

IMPACT FACTOR
2020: 5. 286
OCLC - 1121105510

inflammatory, anti-diabetic and regenerating properties for the development and production of import-substituting, original phytodermatological preparations. The complex has been studied [1, 2, 3].

MATERIALS AND METHODS

Diabderm multicomponent ointment has anti-inflammatory and regenerating properties, contains medicinal Urtica, calendula leaves, mulberry leaves, yarrow, liquid extract of sage root (5%), boric acid (3%), menthol (0,5%) and urea (10%) and various bases [4].

The standard composition of Diabderm ointment, prepared on different bases.

Name of ingredients	Number of ingredients in ingredients, g		
	1	2	3
Diabderm extract liquid	5,0	5,0	5,0
Boric acid	3,0	3,0	3,0
Menthol	0,5	0,5	0,5
Urea	10,0	10,0	10,0
Vaseline	42,0		61,5
Anhydrous lanolin		10,0	10,0
Paraffin		10,0	
Sunflower oil		56,5	
Emulsifier T-2	8,5		5,0
Purified water	26,0		-
Total weight	100,0	100,0	100,0

The American Journal of Medical Sciences and Pharmaceutical Research
(ISSN – 2689-1026)
Published: October 31, 2020 | **Pages:** 151-155
Doi: https://doi.org/10.37547/TAJMSPR/Volume02Issue10-23

IMPACT FACTOR
2020: 5. 286
OCLC - 1121105510

The bioavailability of Diabderm complex lubricant, prepared on various bases, was studied in vitro using equilibrium dialysis (Kruvczynski, Poland) for the release of boric acid. Using this method, a comparative comparison of the effect of auxiliary substances - the basis on the dynamics of the release of 3% boric acid, which is part of the lubricant - was carried out. For the experiments, we used samples of Diabderm grease prepared on 3 different bases: I-composition (emulsion base containing petroleum jelly, sunflower oil, emulsifier T-2 and opening water); Ingredient II (adsorption base containing anhydrous lanolin, paraffin and sunflower oil); Composition III (adsorptive ointment containing petroleum jelly, anhydrous lanolin and emulsifier T-2) [4, 5].

RESULTS

The essence of the test: the release of boric acid from a semiconductor membrane (cellophane) into purified water is studied by dialysis with a tube 2.5 cm in diameter and 25-30 cm in length.

Lubricants prepared on different bases are evenly distributed from 5.0 g onto cellophane and attached to the dialysis tube. Then the dialysis tube is placed in a purified aqueous medium with a volume of 50 ml and a temperature of 37 ± 0.5 ° C with a touch of 2 mm. During the experiment, the medium is placed in a thermostat and stirred from time to time, samples are taken from 5 ml of dialysis every 30 minutes - 0.5; 1; 1.5 hours and add 5 ml of purified water to the medium so that the total volume of the dialysis does not decrease.

To the sample taken for analysis, add 10 ml of pre-neutralized glycerin on phenolphthalein and titrate with 0.01 M sodium hydroxide solution until a pink color is formed. Then 5 ml of neutralized glycerin is added to the solution and, if the color disappears, titration continues. Titrate the last 5 ml of glycerol in the same order until it changes color.

1 ml of 0.01 M sodium hydroxide is equivalent to 0.0006183 boric acid.

Equation for calculating the concentration of boric acid:

$$S = \frac{K \times T \times B\,1 \times 25}{V2 \times a} \times 100\%$$

In this case, K is the correction factor = 1.04;

T — on 0.01 M NaOH the titer of the solution is on the acid (0.0006183);

V_1 — volume of 0.01 M NaON solution used for titration, ml;

25 – total volume of dialysis, ml;

V_2 is the volume of the selected dialysis, ml;

The American Journal of Medical Sciences and Pharmaceutical Research
(ISSN – 2689-1026)
Published: October 31, 2020 | **Pages:** 151-155
Doi: https://doi.org/10.37547/TAJMSPR/Volume02Issue10-23

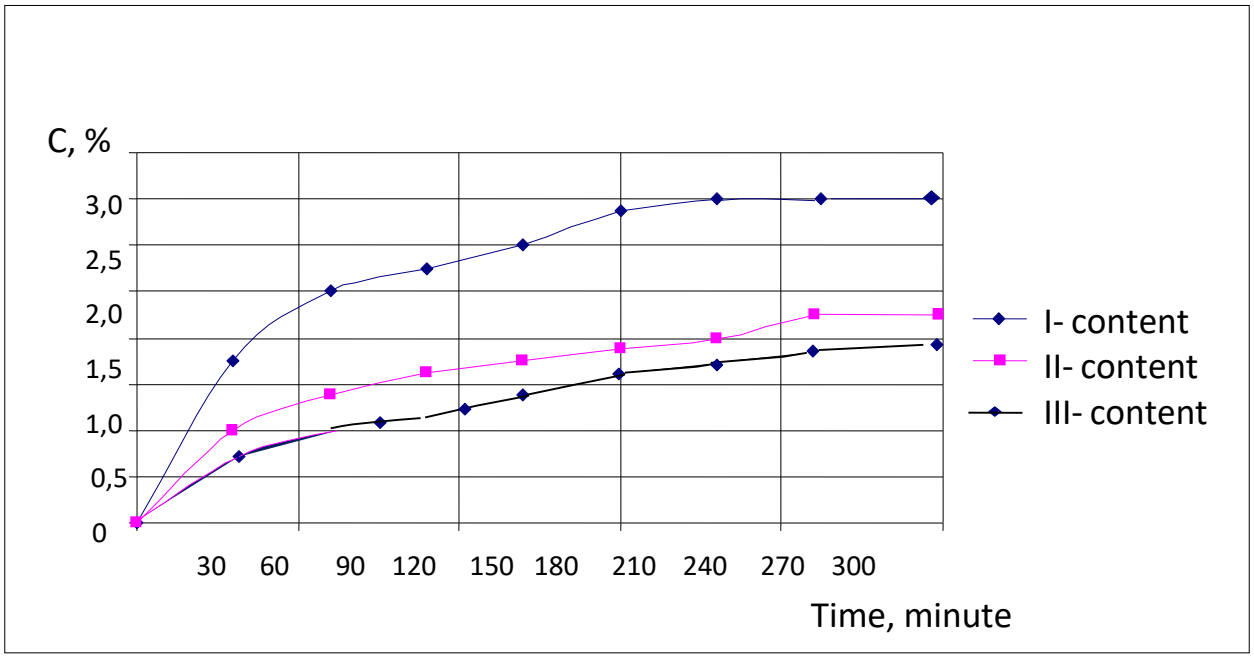
IMPACT FACTOR
2020: 5. 286
OCLC - 1121105510

a - the amount of active substance in the grease, g.

Results of an in vitro study of the bioavailability of Diabderm ointment prepared on various bases

Studied content	Time, minutes concentration of liberated boric acid, %									
	30	60	90	120	150	180	210	240	270	300
I- content	1,25	1,80	2,23	2,5	2,8	3,0	3,0	3,0	3,0	3,0
II- content	1,0	1,3	1,5	1,6	1,7	1,9	2,0	2,2	2,3	2,4
III- content	0,5	0,9	1,1	1,3	1,4	1,6	1,7	1,8	1,9	2,0

Diagram of the kinetics of boric acid separation from lubricants of different bases



The results showed that in vitro experiments proved that the sample of emulsion-based grease is more bioavailable than other bases.

The American Journal of Medical Sciences and Pharmaceutical Research
(ISSN – 2689-1026)
Published: October 31, 2020 | **Pages:** 151-155
Doi: https://doi.org/10.37547/TAJMSPR/Volume02Issue10-23

IMPACT FACTOR
2020: 5. 286
OCLC - 1121105510

DISCUSSION

Choosing the right base in greases helps the active ingredient reach its intended use more quickly and achieve long-term effectiveness. Today, much attention is paid to the ratio of the main active and auxiliary substances. Excipients must be biologically inert from a technological point of view.

CONCLUSION

Recent studies have shown that the biopharmaceutical properties of soft drugs, including the biological absorption of active substances, fat base and other excipients, affect drug concentration and preparation method. The obtained results showed a positive pharmacological effect, ensuring the effectiveness of biologically active substances in the developed anti-inflammatory application phytopreparations.

REFERENCES

1. Khusenova Sh.Sh., Umaralieva NR, Fayzullaeva N.S. Technology and quality assessment of Dermostop ointment / Topical issues in the development of new drugs: Abstracts of the XXIV International Scientific and Practical Conference of Young Scientists and Students (April 120). 253
2. Ksorudzhaya T. G., Chuchalin V. S. Biopharmacy - научное направление в разработке и совершенствовании лекарственных препаратов: study guide. - Tomsk: Laboratory of operative polygraphy. Siberian State Medical University, 2006. - P.40.
3. Khusenova Sh.Sh., Fayzullaeva N.S. Разработка технологии жидкого экстракта-концентрата “Дермостоп” и оценка качества // Pharmaceutical journal, Tashkent, -2017.-N1.-p.89-94.
4. Khusenova Sh.Sh., Fayzullaeva N.S., Umaralieva N.R., Malikova M.A. Разработка состава и технологии олеогеля «Дермостоп»// Proceedings of the Republican Scientific and Practical Conference (with the international one). "Topical issues of education, science and production in pharmacy." - Tashkent, November 17-18, 2016. - p. 388-389