

## TEMPTATIONS AND RISKS OF THE ESTHETIC PHARMACOLOGY: THE STIMULATORS OF THE EYELASHES GROWTH

E.V. Karnaukh, V.M. Likha, E.V. Dontsova

The Kharkiv National Medical University (61022, Ukraine, Kharkov, 4 Nauky ave.,  
The Kharkiv National Medical University), e-mail: [ella69k@mail.ru](mailto:ella69k@mail.ru)

In this article it presents the information about innovation method of the application in the field of esthetic medicine the modern pharmacological drug from the prostaglandins' group, named BIMATOPROST. Initially, this active substance was widely used in ophthalmological practice for the treatment of primary open-angle glaucoma and for this indication was part of a number of ophthalmological drugs such as Kareprost, Bimat, Lumigan, Xlash and etc. Nowadays, the presented active substance has already begun to be used according to a different indication, mainly for cosmetic purposes - to stimulate the growth of the eyelashes. This was most relevant in those clinical cases where the esthetically patient was not satisfied with the length and thickness of the eyelashes, which could be diagnosed like a hypotrichosis of the eyelashes. In the article also was noticed about the danger of the side effects and risks of such esthetic pharmacology.

Keywords: hypotryhoz of the eyelashes, Vymatoprost, cosmetology

## СОБЛАЗНЫ И РИСКИ ЭСТЕТИЧЕСКОЙ ФАРМАКОЛОГИИ: СТИМУЛЯТОРЫ РОСТА РЕСНИЦ

Э.В. Карнаух, В.М. Лихая, Е.В. Донцова

Харьковский Национальный медицинский университет (61022, Украина, Харьков, просп. Науки, дом 4.  
Харьковский Национальный медицинский университет), e-mail: [ella69k@mail.ru](mailto:ella69k@mail.ru)

Представлены данные инновационного метода применения в области эстетической фармакологии современного фармакологического средства из группы простагландинов, известный под названием Биматопрост. Изначально это действующее вещество широко применялось в зарубежной офтальмологической практике для лечения первичной открытоугольной глаукомы и по этому показанию входило в состав ряда офтальмологических средств, таких как Карепрост, Бимат, Люмиган, Xlash и другие. А в настоящее время представленное действующее вещество уже начали применять по другому показанию и преимущественно именно уже в косметических целях – для стимуляции роста ресниц. Наиболее актуально это представлялось в тех клинических случаях, когда эстетически пациента не удовлетворяли длина и густота ресниц, что диагностически могло быть проявлением такого заболевания, как «Гипотрихоз ресниц». В статье также обращено внимание на опасность возникновения побочных эффектов и последующие риски подобной эстетической фармакологии.

Ключевые слова: гипотрихоз ресниц, Биматопрост, косметология

**Introduction.** Every women dream to have long and lush eyelashes. Nowadays, in beauty rooms you can not only save what was given by nature, but also improve your beauty. It would seem that the choice in favor of naturalness is obvious, but still the suggestion is so tempting. *"Unlike hair on the head, eyelashes and eyebrows grow only up to the certain length, given by nature,"* - says the trichologist of the popular American clinic.

**Relevance of the topic.** The length of the eyelashes depends on the number of cells of the ciliary papillae. Drugs with prostaglandins irritate the hair bulb, increase blood circulation and stimulate cells of the ciliary papilla, because of their rapid proliferation the growth and the length of eyelashes are accelerated. However, the organism is a holistic system where everything is interconnected: intervening in one process, you inevitably affect others [1-3].



Bimatoprost is the active substance in several ophthalmic drugs (Kareprost, Bimat, Lumigan, Xlash, etc.), which was used to treat primary open-angle glaucoma, but today the substance is used for cosmetic purposes in the treatment of hypothyroidism of eyelashes. It was appeared in the 20<sup>th</sup> years of the last century in the USA. The exact mechanism of its action is unknown, but it is assumed that the growth and magnification the volum of eyelashes can occur due to an increase in the duration of the phase of existence of the hair follicle, and the emergence of a large number of new eyelashes [4-5].

Very soon after the beginning of a wide application patients, who was suffered from glaucoma, became observed interesting effect – the eyelashes of patients became longer and thicker. This fact could not be interesting for the cosmetology market of the USA.

After that, under the control of the FDA in the USA the Allegran company conducted a double-blind, placebo-controlled research, whose purpose was to determine the effect of bimatoprost on eyelash growth.

According to this research, after 16 weeks of the everyday using of this drug 98 % women said, that their lashes became darker, thicker and longer. When the bimatoprost effect was proven, the Allegran company patented bimatoprost on the market of the USA. Due to the patent for the production, the company could hold any price for the drug during 15 years. So, bimatoprost became a “gold” drug, which has costed 2000-2500 dollars per gram of pure substance.

Today, on the Ukrainian market, we can often see advertising of the different drugs based on bimatoprost at a procurable price.

But is this drug safe? Beauty, of course, is important, but we should not forget about the health too.



Prostaglandins trigger inflammation in the cells, because they irritate the hair bulb. In addition to the fact that any inflammatory process is harmful in itself, it leads to dermatitis, and sometimes to allergic conjunctivitis. "The eyes are red and itch, tears flow like a river," – the beginning of the reviews, wrote by girls', who used drugs for eyelashes growth. "Except prostaglandins, allergic reactions are stimulated by a shock dose of oil extracts of plants, vitamins and preservatives, which are also added to eyelash growth products," says the assistant of the Department of Dermatology, Mycology and Cosmetology, RMAPO. This composition can occlude the sebaceous glands in the corners of the eyes and along the edge of the eyelid".

Another side effect of prostaglandins is the decreasing of intraocular pressure (as we remember, for this purpose they were originally used in medicine). The pressure in the eyeball should be constant; to the contrary the metabolic processes in the retina and the optic nerve are destroyed. Ophthalmologists explain: "Prostaglandins improve the outflow of the liquid circulating in the eye therefore the pressure in the eyeball falls. When you prescribe ophthalmic drugs, which are based on prostaglandins, you should always warn patients that they may have a burning sensation in the eyes, as well as pigmentation of the eyelids and the iris - they can become darker or covered with specks. "

The third of the most popular side effect is the vascular grid on the eyelids. The skin of the eyelids is the thinnest, about 0.4-0.6 mm, the vessels are located very close to its surface. Because of the main effect of prostaglandins – increasing blood circulation - the capillaries begin to expand.

Moreover many girls get in addition to long eyelashes "fluff" around the eyes.

Finally, there is a risk that eyelashes can simply fall out. After the refusal from drug, long and thick eyelashes on average a month later again become "ordinary".

Moreover, most drugs with prostaglandins have abstinence syndrome. This they are similar to hormonal drugs: you stop using - and the condition can not only return to the beginning, but also become worse. Dermatologists claim, that if you avoid contact dermatitis and conjunctivitis, it is not necessary to deny these drugs.

### **Materials, methods and results of the study.**

Because of the information we collected is very ambiguous, we decided to conduct our research of the bimatoprost side effects.

The purpose of our experiment is to investigate the effectiveness of this drug and the presence of side effects.

Within two months, a group of girls (25 people) aged 18-23 years have used bimatoprost once a day, putting on the skin of the upper eyelid (only at the base of the eyelashes, not getting on the mucous membrane of the eye). This target group did not have ophthalmic diseases.

Step-by-step instruction is attached:



*Step 1. Clear the eyelids and eyelashes from the remnants of make-up.*

*Step 2. Apply 1 drop of the drug to the applicator.*

*Step 3. Distribute the drug to the growth zone of the eyelashes.*

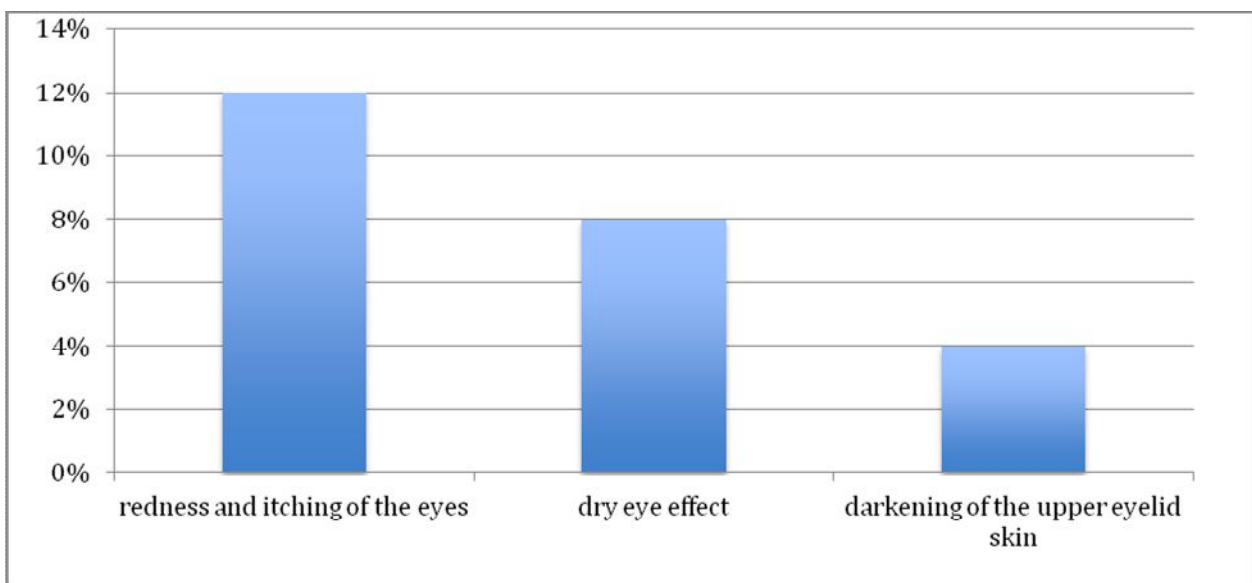
*Step 4. Remove the remnants of the drug from the skin around the eyes with a dry cotton swab.*

*Step 5. Wash the applicator with water.*

The following side effects became apparent during the study:

- 3 people – 12% - redness and itching of the eyes;
- 2 people – 8% - dry eye effect;
- 1 person – 4% - darkening of the upper eyelid skin.

The intensive growth of the lashes was observed for each woman. Example before and after:



**Conclusion.** Many girls blindly believe, that all their troubles are from minor flaws in their appearance, including too short or thin eyelashes. Numerous think, that long eyelashes can change not only their appearance, but also whole their life. To conclude we can say, that bimatoprost is actually effective drug, but it has side effects in 24 per cent of cases.

**References:**

1. Bimatoprost ophthalmic solution (Careprost) [Electronic resource]. - Access mode: <http://proglaza.ru/drugs/drugie-preparaty/bimatoprost-e.html>
2. Means for the growth of eyelashes: masthev or marketing? [Electronic resource]. - Access mode: [http://www.glamour.ru/beauty\\_health/practice/44350\\_prawda\\_v\\_glaza\\_kakie\\_sredstva\\_vredyat\\_resnitsam](http://www.glamour.ru/beauty_health/practice/44350_prawda_v_glaza_kakie_sredstva_vredyat_resnitsam)
3. Bimatoprost. Instructions for use [Electronic resource]. - Access mode: <https://bimatoprost.ru/manual.php>
4. Vidal. Reference book of medicines. Beauty and health [Electronic resource]. - Access mode: <https://www.vidal.ru/encyclopedia/esteticheskaya-medicina>
5. The register of medicines. Bimatoprost [Electronic resource]. - Access mode: [https://www.rlsnet.ru/search\\_result.htm?word](https://www.rlsnet.ru/search_result.htm?word)