

ОРГАНІЗАЦІЯ ТА ЕКОНОМІКА ФАРМАЦІЇ

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UDC 615.014.2:615.453.6:330.322.2

SUBSTANTIATION OF THE SOCIO-MEDICAL REASONABILITY OF DEVELOPMENT AND COST-EFFECTIVENESS OF “TIOTARIN” TABLETS

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Key words: investment; economic efficiency; commercial attractiveness; “Tiotarin” tablets; socio-medical reasonability

For the first time using a systematic approach a comprehensive model to determine the socio-medical reasonability, cost-effectiveness and commercial attractiveness of developing a new drug “Tiotarin” has been proposed. To assess financial results from the introduction of the drug “Tiotarin” into industrial production the results of the predictive target sales according to the optimistic, most probable and pessimistic versions of the experts of the Marketing Department of domestic drug manufacturers have been used taking into account the economic calculation and market conditions. The scientific and practical approaches, which include marketing, economic, financial research methods and the method of mathematical modelling, have been proposed. They allow to substantiate the socio-medical reasonability, cost-effectiveness and commercial attractiveness of a new drug “Tiotarin” based on the use of variants of modern marketing strategies. Creation of the through marketing programme for introducing the innovative project as an instrument of the project implementation has been recommended.

An important indicator of efficiency of the innovative activity of a pharmaceutical company is the sales volume of a new drug and the share of the market segment that the drug has. The sales volume characterizes the reaction of customers and the market on the therapeutic effectiveness, compliance with quality and the drug competitiveness [1, 2, 7, 9].

Together with the level of profitability the sales volume creates the financial coverage and determines the commercial success of the drug, it guarantees the return of investments and obtaining sufficient business income.

Along with it, even high profitability, but low sales form insignificant financial assets. It significantly prolongs the time of investment return, reduces the potential and attractiveness of the market segment and the success of the drug at the market as a whole [3, 7, 9].

When assessing the cost-effectiveness of introduction of a new drug its prime cost and profitability, expected volumes of production and sales for the next 3-5 years, as well as the amount, structure, source of investment, procedure and terms of their use and return are determined [1, 3, 7].

The situation modelling allows predicting the variants for passing financial flows and receiving sums of financial assets, as well as determining financial return of the project.

The decision making regarding the project is based on the summarised analysis of the marketing situation

and passing investments in optimistic, pessimistic and the most probable variants [1, 7, 9].

The search for promising market niches for development and introduction of new drugs into production takes into account a comparative drug efficacy and safety, the volume of the market segment and its dynamics, the number of foreign and domestic analogues, the price range, social significance, economic and commercial reasonability [3, 8, 10-12].

The quality of a drug is determined by the system of indicators characterizing the efficacy, safety, physical and economic accessibility, advantages over analogues, convenience and frequency of use, the rate of onset and duration of action, etc. [7, 10-12].

The aim of the work is to substantiate the socio-medical reasonability of development and cost-effectiveness of the combined tablets “Tiotarin”.

Materials and Methods

As the study subject a new combined drug for correction metabolic disorders in diabetes mellitus – “Tiotarin” tablets was used [4, 6].

In this paper the marketing, economic, financial research methods were used for substantiation of the socio-medical reasonability, cost-effectiveness and commercial attractiveness of a new drug “Tiotarin”.

Results and Discussion

With the help of the SWOT analysis the in-depth study of the peculiarities of “Tiotarin” tablets when us-

Table 1

The main indicators of business operations according to the combined drug “Tiotarin” project

Characteristics	1 year	2 years	3 years	4 years	5 years	Total, UAH
The target sales, thous. packs, in particular:						
optimistic	12.0	25.0	66.0	91.0	120.0	314.0
most probable	6.50	18.0	34.0	52.0	83.0	193.5
pessimistic	3.0	12.0	21.0	36.0	62.0	134.0
Production prime cost, UAH/pack	45.0	45.0	45.0	45.0	45.0	225.0
The manufacturer's price, UAH/pack	123.0	123.0	123.0	120.0	118.0	607.0
Discount, %	30	25	20	15	15	
Profit, UAH, in particular:						
optimistic	128 850	371 600	573 800	740 350	946 000	2 760 600
most probable	85 900	232 250	305 550	435 500	688 000	1 747 200
pessimistic	68 720	139 350	174 600	340 485	516 000	1 203 520

ing in the treatment process was conducted. Based on this analysis it has been found that the combined drug studied has good properties as a medicine by the pharmacotherapeutic characteristics, possesses a number of promising abilities in improving of the drug accessibility and affordability, medical advisability of expanding the use in the treatment process and increase in the share of the commodity segment.

The economic indicators of the innovative drug “Tiotarin” with thioctic acid and taurin in the form of tablets were studied when developing and introducing to the market. Using the economic analysis the prime cost of the composition of the tablets proposed was determined, namely evaluation of all components of the basic substances and excipients, as well as materials, wages, accruals, cost of sales and administrative expenses. It has been found that the production cost for the drug “Tiotarin” will be 35.58%, total expenditures – 36.67% of the product's cost. In addition, the production profitability will be 130.66%, and the complete profitability – 126.88%; it indicates a good production yield of the combined drug proposed [5].

It should be noted that since the beginning of production and sales of the drug the orientation of investments varies from expenditure on research and development and state examination and registration to marketing communications (the work of medical representatives, advertising, information, etc.), production supplies and controlled accounts receivable. At the same time the income from the sale of the drug, which is constantly growing, begins.

An important factor for the drug manufacturer is the dynamics of its sale, revenue and earnings as a component of the economic and financial efficiency. The factor of a stable market and economic success of the new drug is fast replenishment of the largest number of pharmacies of Ukraine with this new drug and the information about it to target audiences.

To assess financial results from the drug introduction into industrial production the results of the predictive target sales according to the optimistic, most probable

and pessimistic versions of the experts of Marketing Department of domestic drug manufacturers were used.

When determining the predictive target sales the experts in marketing and commodity market of “ASTRA-FARM”, LLC (Vyshneve, Ukraine) proceeded from the predictive number of patients with this profile and the amount of the drug for treatment, drugs-analogues as competitors, as well as the factor of conservatism and preferences of physicians, pharmacists and patients at the first stage of the product life cycle.

The appearance of a domestic combined, qualitative and cheaper drug will provide competitive advantage to the manufacturer, and it will be primarily attributable to the higher economic affordability for the population.

Within the first year of the presence of a new drug at the market the potential consumers are mainly familiar with the manufacturer and his new product and determine if this product meets the expected criteria of quality, efficiency and affordability.

Within the second year, consumers already have a perception regarding the drug proposed by this manufacturer, therefore, with their positive attitude its sales volume will increase.

The third year will be characterized by increased sales due to the growth in the number of repeated purchases by consumers of the drug because they already know this drug from their own experience and the appearance of new buyers who have previously only heard about the new drug, but never used it.

According to the economic calculation and market conditions the contract price of the manufacturer can be in the amount of 123 UAH per pack of the combined drug; it corresponds to its positioning at the level of average market prices of the current year.

To encourage distribution it is recommended to use discounts from the price of the manufacturer in the amount of 30% (the first year of the market entry), 25% (the second year) with subsequent reduction to 15%. Fixed costs for the product are identified in the amount of 95 thous. UAH/year. The optimal annual sales of the drug according to the marketing research are predicted only

Table 2

The main indicators of investments in the development and introduction of the combined drug "Tiotarin" in the manufacture

Name	Investment, thous. UAH							
	1 stage	2 stage	1 year	2 years	3 years	4 years	5 years	Total
1. Development of the drug and registration dossier, state examination and registration, in particular:	8.90	104.90						113.80
1.1. Preparatory work	8.90							8.90
1.2. Research work		5.50						5.50
1.3. Evaluation and registration		99.00						99.40
2. Direct investment in production and promotion, in particular:	50.00	380.00	270.00	150.00				850.00
2.1. In fixed assets	-	-						
2.2. In marketing communications	50.00	250.00	150.00	60.00				510.00
2.3. In manufacturing inventory	-	130.00	120.00	90.00				340.00
3. Receivables		110.00	80.00	75.00				265.00

from 6.5 (the first year) to the possible 83.0 (the fifth year) thous. packs (Table 1).

The assessment of the financial results of commercial introduction of "Tiotarin" tablets was carried out by modelling the monetary investment financial flows of the project. The calculation of the cash flows was made taking into account changes in the value of money in time as a discount, tendencies of changes in the cost of production, the peculiarities of substitution of the fixed costs, the value added tax, profit tax, etc. To stimulate the promotion and sales of the new drug the special discounts were determined [1, 7, 9].

The first and second stage of development is associated with the development costs, the state examination with clinical trials and registration of the drug "Tiotarin". The results of modelling (Fig. 1) show that return of the investments for the combined drug "Tiotarin" is predicted beginning from 1 year and 5 months (the optimistic version) and up to 2 year and 6 months (the pessimistic version) from the start of the commercial production and commercial use.

The most likely variant is the return of funds within 2 years and 1 month from the beginning of its commercial sales. In such a case, the period of the mandatory development, the state examination and registration of the drug (prior the commercial time) should be taken into consideration, and it will increase the period of investment over 4 years.

Thus, the comprehensive economic, marketing and financial analyses conducted show an insufficiently attractive investment situation as for the new drug, first of all, concerning the speed of payback of the capital invested in the project at the expense of the low market sale of the drug "Tiotarin" within the first three years.

At the same time high demands of the quality for conducting development and normative documents, significant research intensity under special control of the state branch authorities not only considerably increase the need of the amount of investment, but also prolong their return. In the market conditions the amount of in-

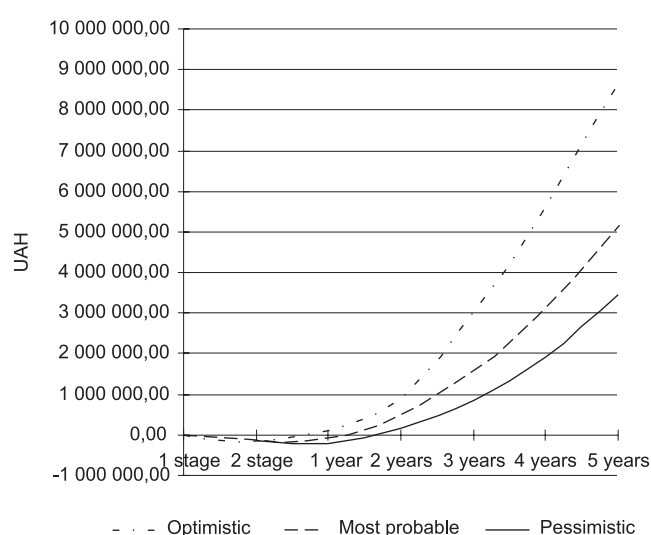


Fig. 1. The model of financial investment flows of the "Tiotarin" tablets project.

come and profit from the commercial use of the new drug will depend on the volume of its sales. Moreover, it is necessary to achieve the presence of the drug in most pharmacies with its first production batches simultaneously with the active information support of target audiences – physicians, consumers and pharmacists.

The work of the external service of the manufacturer – medical (pharmaceutical) representatives will be important in activating components of marketing communications. The organization or intensification of services in most regions of Ukraine will become a powerful factor in the active implementation of the innovative policy of the enterprise – the manufacturer of a new drug.

For the active capture of the segment of the market and substantial increase in the volume of sales of the new drug "Tiotarin" the Marketing Department of drug manufacturers recommends to increase the amount of investment in marketing communications within the first and second year of its production and create a marketing programme of the complex introduction of the drug

Table 3

The revised main indicators of business operations according to the combined drug “Tiotarin” project

Characteristics	1 year	2 year	3 year	4 year	5 year	Total
The target sales, thous. packs, in particular:						
optimistic		74.00	96.00	160.00	210.00	
most probable	36.00	62.00	83.00	145.00	186.00	
pessimistic	24.00	43.00	60.00	88.00	115.00	
Production prime cost, thous. UAH/pack	45.00	45.00	45.00	45.00	45.00	225.00
The manufacturer's price, UAH/pack	123.00	123.00	123.00	120.00	118.00	
Discount, %	30	25	20	15	15	
Profit, UAH, in particular:						
optimistic	588100	1032850	1230180	2019480	2980350	
most probable	496800	793470	1064800	1940600	2510480	
pessimistic	325760	514620	795720	1200470	1500320	

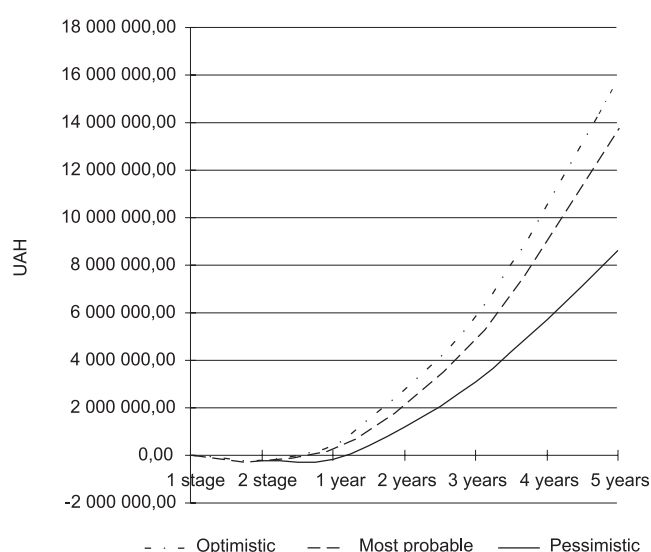


Fig. 2. The model of financial investment flows of the “Tiotarin” tablets project in the new conditions of the marketing strategy.

to the market, as well as management of marketing strategies at the stages of the product life cycle with the programme of the loyalty support of target audiences.

It is possible to save the necessary investments due to additional research and development of projects of documents for the registration dossier by the specialists of the manufacturer based on control of the critical way and deadlines.

According to the conclusions and recommendations of specialists in marketing of drug manufacturers we conducted modelling of variants of additional increase in the amount of investments and their impact on drug sales, the amount of financial flows, profit and the pay-back period.

The main indicators of investments concerning the drug proposed according to the variant of increase in the amount of investments in marketing communications are given in Table 2.

Therefore, active implementation of marketing communications and work with target audiences will also lead to changes in sales volumes.

The predictive target sales in the new conditions of the marketing strategy are given in Table 3.

The results of modelling of the indicators (Fig. 2) show the greater capture of the segment of the market when introducing a new drug to the market and a rapid further increase of the sales volume and revenue; it significantly enhances both the commercial and the innovative potential of the drug as a commodity.

Already during the first three years the potential sale of the drug “Tiotarin” even according to the pessimistic prediction will be about 130 thous. packs.

Therefore, innovative attractiveness and commercial efficiency of a new combined domestic drug “Tiotarin” in the form of tablets, identification of the components aimed at enhancing the marketing communications, including also the involvement of the external service of the company, on the target audience are confirmed by the refinement conducted by us in the marketing strategy of the manufacturer concerning the new combined drug.

CONCLUSIONS

1. Based on scientific and practical approach proposed the socio-medical reasonability, cost-effectiveness and commercial attractiveness of a new drug “Tiotarin” have been substantiated using variants of modern marketing strategies.

2. Based on the revised indicators of investments and predictive sales the models of financial flows for commercial use of a new drug have been evaluated, and its active introduction with the rapid capture of the market, significant sales volumes and revenue has been confirmed. Creation of the through comprehensive marketing programme for introducing the innovative project as an instrument of the project implementation has been recommended.

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ОБГРУНТУВАННЯ СОЦІАЛЬНО-МЕДИЧНОЇ ДОЦІЛЬНОСТІ РОЗРОБКИ ТА ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ТАБЛЕТОК «ТІОТАРИН»**Св.М.Коваленко****Ключові слова:** інвестиції; економічна ефективність; комерційна привабливість; таблетки «Тіотарін»; соціально-медична доцільність

Вперше з використанням системного підходу запропонована комплексна модель за визначенням соціально-медичної доцільності, економічної ефективності і комерційної привабливості розробки нового лікарського препарату. Для оцінки фінансових результатів від запровадження у промислове виробництво препарату «Тіотарін» згідно з економічним розрахунком та ринковою кон'юнктурою використані результати прогнозних планових обсягів продажів за оптимістичним, найбільш вірогідним та песимістичним варіантами експертів відділу маркетингу вітчизняних виробників ліків. Запропоновані науково-практичні підходи, які включають маркетингові, економічні, фінансові методи досліджень і метод математичного моделювання, дають можливість обґрунтувати соціально-медичну доцільність, економічну ефективність та комерційну привабливість нового лікарського препарату на основі використання варіантів сучасних маркетингових стратегій. Рекомендовано створення наскрізної маркетингової програми з втілення інноваційного проекту як інструменту його активної реалізації.

ОБОСНОВАНИЕ СОЦИАЛЬНО-МЕДИЦИНСКОЙ ЦЕЛЕСООБРАЗНОСТИ РАЗРАБОТКИ И ЭКОНОМИЧЕСКОЙ ЭФФЕКТИВНОСТИ ТАБЛЕТОК «ТИОТАРИН»**Св.Н.Коваленко**

Ключевые слова: инвестиции; экономическая эффективность; коммерческая привлекательность; таблетки «Тиотарин»; социально-медицинская целесообразность

Впервые с использованием системного подхода предложена комплексная модель по определению социально-медицинской целесообразности, экономической эффективности и коммерческой привлекательности разработки нового лекарственного препарата «Тиотарин». Для оценки финансовых результатов от внедрения в промышленное производство препарата «Тиотарин» согласно экономического расчета и рыночной конъюнктуры использованы результаты прогнозных плановых объемов продаж при оптимистичном, наиболее достоверном и пессимистическом вариантах экспертов отдела маркетинга отечественных производителей лекарств. Предложены научно-практические подходы, которые включают маркетинговые, экономические, финансовые методы исследований и метод математического моделирования, которые дают возможность обосновать социально-медицинскую целесообразность, экономическую эффективность и коммерческую привлекательность нового лекарственного препарата «Тиотарин» на основе использования вариантов современных маркетинговых стратегий. Рекомендовано создание сквозной маркетинговой программы по осуществлению инновационного проекта как инструмента его активной реализации.