

## Maintaining a Normal Level of Plasma Bioregulators on the Background of Daily Wearing Corrective Underwear in Women with Developing Gynoid Obesity

Albina Ahatovna Bikbulatova\*

Russian State Social University, st. V. Pika, 4, Moscow, Russia, 129226.

\*Corresponding author E-mail: aabikbulatova@mail.ru

<http://dx.doi.org/10.13005/bpj/1690>

(Received: 17 March 2019; accepted: 22 May 2019)

In modern society, obesity in women in developed countries retains its widespread prevalence. Much attention to this problem is caused by the current increase in the number of cases of obesity among middle-aged women who are not able to regularly experience muscular loads in the form of exercises and comply with various dietary restrictions. In this regard, there is a need for cosmetic correction of their figure in the presence of minimal effort on the part of women with signs of obesity. The solution to this problem may be the wearing of corrective clothing, which is able to effectively reduce the volume dimensions of the body through a soft mechanical impact on it in problem areas. In the work carried out, the safety assessment of the long wearing of the author's version of the trousers was carried out taking into account the dynamics of the plasma level of functionally significant hemostasis bioregulators for half a year. It was found that women with obesity 1 degree, wearing corrective clothing, there was a persistent preservation of the indicators taken into account within the normal range. The great advantage of using the author's version of corrective clothing for women with obesity was the upcoming visual reduction of their body sizes in the area of application of the product. At the same time, all women under observation maintained a consistently normal plasma level of hemostasis regulators corresponding to the control values. The results obtained allow us to consider the author's corrective clothing as a complete and safe component of the visual correction of the manifestations of developing obesity in women.

**Key words:** Second adulthood, Obesity, women, plasma, hemostasis regulators, corrective clothing.

---

An increase in the standard of living of the population and a decrease in the participation of the population in physical labor at work gradually leads to the progressive spread of obesity<sup>1</sup>. Excessive body weight is perceived by women of any age. They very often try to reduce the degree of obesity they have, using different dietary effects and using regular physical exertion with varying degrees of success<sup>2,3</sup>. It has long been observed that in any population there is a significant proportion of

women who are psychologically severely affected by the presence of a cosmetic defect associated with excessive deposition of fat in different parts of the body, but for various reasons not following dietary restrictions and not performing regular exercise<sup>4</sup>. This category of women sees for itself the optimal way out of the current situation is the long wearing of corrective underwear, which can visually reduce the volume of problem parts of the body and create the illusion of greater harmony<sup>5,6</sup>.

There is a point of view that currently used options for corrective underwear are not always indifferent to health and can sometimes weaken blood circulation in the underlying tissues<sup>7</sup>. In this regard, the search continues for effective options for corrective clothing, with mandatory monitoring of its effect on blood parameters relevant to microcirculation, including the level of biologically active substances that affect hemostasis. The ideal of corrective clothing can be considered as its variants that do not have any side effects<sup>8,9</sup>.

In earlier clinical studies<sup>10,11</sup> and in the conducted experiments<sup>12,13,14</sup>, it was shown that many non-drug effects on the body affect its blood, the content of biologically active substances<sup>15</sup>. Previous studies have also found that the use of non-pharmacological agents can have a physiologically beneficial effect on this indicator to a greater or lesser extent<sup>16</sup>. It is known that a large part of working women with obesity is characterized by a low commitment to regular exercise<sup>17</sup>. In this regard, different versions of corrective clothing may be very promising for them<sup>18</sup>. The main requirement for it should be the preservation of health of women wearing it<sup>19</sup>, including the maintenance of a consistently normal and highly significant for microcirculation level of hemostatically significant biologically active substances in the plasma. In this regard, the goal was set in the paper: to evaluate the dynamics of the hemostatically active substances in plasma of women of the second adult age with a gynoid obesity, who are wearing the original version of corrective clothing for 6 months, which is important for microcirculation.

## MATERIALS AND METHODS

The work was performed on women living in Central Russia (Moscow and Moscow Region). The study took 33 clinically healthy women of the second adult age (mean age  $42.1 \pm 2.2$  years). They formed a control group. Also under the observation were taken 45 clinically healthy women of the same age (mean age  $43.2 \pm 1.8$  years) with obesity of 1 degree of the gynoid type, which formed the observation group. The diagnosis of obesity of the first degree in all cases was made according to generally accepted criteria. Concomitant chronic diseases (chronic bronchitis, chronic tonsillitis,

chronic cholecystitis) that were present in some of the women in the observation group were in a state of long-lasting remission. The main criterion for selection in the observation group was the desire of women to look more slender without dieting and exercise. The control group selected clinically healthy women without any chronic diseases. This study was approved by the local ethics committee of the Russian State Social University on May 14, 2015 (protocol '5). All examined individuals gave written informed consent to participate in the study.

In the course of performing the work surveyed was determined by the activity of processes of lipid peroxidation (LPO) in plasma, which was estimated by the content of thiobarbituric acid-active products by using sets of firm "Agat-Med" (Russia) and the level of acylhydroperoxis (AHP)<sup>20</sup>. Recorded antioxidant activity of the blood<sup>21</sup>.

In the study, an enzyme immunoassay was used to assess the concentration of P-selectin and PESAM-1 molecules in plasma (Bender MedSystems GmbH, Austria). The content of thromboxane B<sub>2</sub> and 6-keto-prostaglandin F<sub>1</sub>α was also determined in the blood plasma of the examined individuals by enzyme immunoassay using Enzo Life science kits (USA). In addition, the total content of nitrogen oxide metabolites was determined by a conventional method in plasma<sup>22</sup>.

All women in the observation group for at least 6 hours a day every day for 6 months wore corrective clothing developed by the author, designed to correct the figure and reduce its visual characteristics. Applied corrective figure women's clothing consisted of interconnected front and rear panels made of fabric, forming a pair of leggings, in which the holes for the legs and the hole for the waist were edged with elastic tape. In the front middle seam of the product used, there is a connecting element consisting of a vertical row of hooks and several vertical rows of loops in response to them. The panels were made entirely of elastic fabric, with a hole in the crotch area on each panel<sup>23</sup>.

The women of the observation group were examined and examined at the end and after 3 and 6 months of daily wearing corrective clothing. The control women were examined and examined once.

The numerical values obtained during the study were processed using Student's t-test (t).

## RESULTS

During the whole period of use of corrective women clothes in any case they have not been marked by complaints of discomfort or deterioration of the source of well-being. In all cases the satisfaction of women about achieving greater harmony of shapes in the original problem areas (thighs).

Daily wearing of corrective clothing was accompanied by the maintenance of a low level of plasma LPO processes in observable women with signs of obesity. So, after 3 months of observation, the amount of AHP and thiobarbituric acid products in their plasma remained at the level of  $1.72 \pm 0.046 D_{233}/1$  ml and  $3.25 \pm 0.040$   $\mu\text{mol/l}$  (in control  $1.74 \pm 0.032 D_{233}/1$  ml and  $3.22 \pm 0.037$   $\mu\text{mol/l}$ , respectively). By 6 months of wearing corrective clothing, the plasma AHP content in the observed women with obesity was  $1.76 \pm 0.041 D_{233}/1$  ml with a thiobarbituric acid level of active compounds of  $3.21 \pm 0.038$   $\mu\text{mol/l}$ . This was accompanied by the stability of plasma antioxidant activity ( $32.0 \pm 0.44\%$  at the end and  $32.4 \pm 0.40\%$  at the end of the observation). As a result of wearing the author's version of corrective clothing for women,

the preservation of normal plasma concentrations of the adhesion molecules taken into account in the work was noted at the outcome level (Table 1). For six months of observation in women with obesity, the levels of P-selectin and PESAM-1 remained at the same level, not significantly different from the level of these indicators in the control.

In the blood of examined women with incipient obesity in the outcome of an austere balance of metabolites of arachidonic acid: the level of thromboxane  $B_2$  and 6-keto-prostaglandin  $F_{1\alpha}$  in their plasma were comparable to the control (Table.1). This was accompanied by them in the outcome of the high content in plasma amount of total nitric oxide metabolites, not different from control values. In plasma of these women after daily wearing for six months corrective clothing, marked the preservation of a balance take into account metabolites of arachidonic acid. So, by 6 months of observation the levels of thromboxane  $B_2$  and 6-keto-prostaglandin  $F_{1\alpha}$  remained at the level close to the control values (Table.1). This was accompanied by the examined after 6 months pay the high content in their plasma total nitric oxide metabolites.

**Table 1.** Dynamics of hematological parameters in women with obesity, daily bearing the author's version of corrective apparel

Parameters	Clinically healthy women with obesity, wear corrective clothing, n=45, M $\pm$ m			Control, n=33, M $\pm$ m
	initial state	3 months	6 months	
acylhydroperoxides of plasma, $D_{233}/1$ ml	1.75 $\pm$ 0.036	1.72 $\pm$ 0.046	1.76 $\pm$ 0.041	1.74 $\pm$ 0.032
thiobarbituric acid-products of plasma, $\mu\text{mol/l}$	3.19 $\pm$ 0.049	3.25 $\pm$ 0.040	3.21 $\pm$ 0.038	3.22 $\pm$ 0.037
antioxidant activity of plasma, %	32.0 $\pm$ 0.44	31.9 $\pm$ 0.35	32.4 $\pm$ 0.40	32.3 $\pm$ 0.44
P-selectin, ng/ml	98.9 $\pm$ 0.47	98.5 $\pm$ 0.53	98.2 $\pm$ 0.46	98.4 $\pm$ 0.44
PECAM-1, ng/ml	47.1 $\pm$ 0.32	47.3 $\pm$ 0.35	47.0 $\pm$ 0.29	47.3 $\pm$ 0.31
thromboxan $B_2$ , pg / ml	170.1 $\pm$ 0.62	168.8 $\pm$ 0.69	169.0 $\pm$ 0.53	169.2 $\pm$ 0.66
6-keto-prostaglandin $F_{1\alpha}$ , pg / ml	95.1 $\pm$ 0.39	95.3 $\pm$ 0.42	95.4 $\pm$ 0.46	95.2 $\pm$ 0.40
nitric oxide's metabolites, $\mu\text{mol/l}$	35.9 $\pm$ 0.22	36.1 $\pm$ 0.30	36.3 $\pm$ 0.29	36.2 $\pm$ 0.27

Note: no differences were found between the control and the results of the three surveys of the observation group.

## DISCUSSION

At present, in the developed countries of the world, corrective clothing is becoming increasingly popular among women of mature age who have different degrees of obesity<sup>24,25</sup>. Wearing it is a recognized alternative to various dietary restrictions and regular, tedious physical exertion, aimed at achieving a more slender visual perception of a woman's figure. The use of corrective clothing, worn over the hips in the form of leggings, was able to guarantee a taut silhouette and wearing comfort<sup>26</sup>. Women in her feel free, comfortable and more confident in themselves, spending a lot of time on their feet. At the same time, this corrective clothing remained imperceptible under clothing, providing an external change for women for the better<sup>27,28</sup>.

In society and among some researchers, there are some unsupported concerns about the possibility of the negative impact of corrective clothing on microcirculatory processes in tissues. To completely eliminate all doubts in this regard, this study was conducted.

In the work, it was found that the daily long wearing corrective apparel does not affect the original normal LPO intensity in blood plasma of women. This completely eliminated the risk of negative impact on the body's cells<sup>29,30</sup>. Identified in women with obesity, the daily wearing corrective clothes, maintaining a low plasma level of P-selectin and ESTS-1 indicated the presence molecular basis for the optimum microcirculation and platelet activity<sup>31,32</sup>. It also points to minimize they risk episodes of blocking of the capillary bed by platelet microthrombuses and maintaining optimum conditions for metabolism in the tissues on the background of wearing the original clothes<sup>33</sup>.

The basis of the optimum microrheological parameters in daily wearing corrective clothes women also have the stability of the optimum synthesis gemostaticski active substances. This was confirmed by identified in the blood of women groups monitoring the optimal level proaggregant. This was due to the continuing low activity in the formation of thromboxane A<sub>2</sub>, what was judged at low concentrations in their blood its inactive form – thromboxane B<sub>2</sub><sup>34</sup>. Also during wear corrective clothing in women with marked obesity maintaining high levels of its physiological

antagonist of prostacyclin that ensured their balance blood metabolites of arachidonic acid. This condition is physiologically beneficial increased in women who wore corrective clothes, the stability of the active products in the walls of blood vessels NO. This is probably due to the high activity they endothelial NO-synthase. Guaranteed under these conditions microrheological violations in their blood is the key to maintaining optimal level of microcirculation and trophism, including the walls of blood vessels, thereby supporting the production of the necessary quantity of antiplatelet agents<sup>35</sup>.

As a result of the study, it becomes clear that for 6 months of using the author's version of corrective clothing in obese women, low activity of POL processes in plasma remains, ensuring the stability of their metabolic processes in tissues and their compliance with the level of control<sup>36</sup>. The results obtained confirmed earlier observations about the physiology of the corrective state of human clothing<sup>37,38,39</sup>. Based on the study, we can talk about the complete safety of the tested version of corrective clothing in relation to the effect on factors that activate hemostasis<sup>40,42</sup>. This circumstance suggests that in the body of women who wore tried-on clothes, a situation is conducive to the optimum rheological properties of blood in the capillaries<sup>42,43</sup>. In this regard, it is clear that wearing the author's version of corrective clothing is indifferent to the level of biologically active substances in the plasma that is significant for the microcirculation and can be worn by women for a long time<sup>44,45,46</sup>.

## CONCLUSION

Currently, among working women with signs of obesity, the popularity of regularly wearing corrective clothing is growing. Its biggest advantage is its availability and effectiveness as an alternative to dietary restrictions and regular tedious physical exertion in order to achieve a more slim figure. Due to the fact that the use of this garment should occur daily, the issue of its safety is very important in relation to the plasma level of hemostatically active substances that is important for microcirculatory processes in tissues. It has been established that daily 6 months wearing corrective clothing keeps well-being in obese women and does not cause discomfort. Its use

does not affect the level of lipid peroxidation in plasma. In addition, obese women wear corrective clothing every day for six months, accompanied by the preservation of the normal level of biologically active substances that affect hemostasis and blood rheology. The results obtained in the study make it possible to consider the use of the author's version of corrective clothing as a complete and safe version of the correction of a female figure in developing obesity that does not violate the level of biologically active substances in the plasma that are important for microcirculation processes in tissues and hemostasis mechanisms.

### REFERENCES

1. Medvedev IN. Platelet functional activity in clinically healthy elderly. *Advances in gerontology*, **29(4)**:633-638 (2016)
2. Medvdev IN, Skoryatina IA, Zavalishina SYu. Aggregation ability of the main blood cells in arterial hypertension and dyslipidemia patients on rosuvastatin and non-drug treatments. *Cardiovascular therapy and prevention*, **15(5)**:4-10 (2016)
3. Glagoleva TI, Zavalishina SYu. Aggregative Activity of Basic Regular Blood Elements and Vascular Disaggregating Control over It in Calves of Milk-vegetable Nutrition. *Annual Research & Review in Biology*, **12(6)**:1-7. ARRB.33767 DOI: 10.9734/ARRB/2017/33767 (2017)
4. Zavalishina SYu. Physiological Features of Hemostasis in Newborn Calves Receiving Ferroglukin, Fosprenil and Hamavit, for Iron Deficiency. *Annual Research & Review in Biology*, **14(2)**:1-8. DOI: 10.9734/ARRB/2017/33617 (2017)
5. Solodushenkova TS. Multifunctional medical clothing. In the collection: The interaction of science and society: problems and prospects. *Collection of articles of the International Scientific and Practical Conference*, 104-106 (2017)
6. Slesarchuk IA, Gubareva LA. The study of the possibilities of creating therapeutic and prophylactic clothing, controlling the state of the human body. *The territory of new features. Bulletin of the Vladivostok State University of Economics and Service*, **4(31)**:165-170 (2015)
7. Chizhova, N.V., Chalenko, E.A., Shpachkova, A.V. Designing corset underwear. Moscow, 2013, 64.
8. Chizhova NV, Chalenko EA, Bordacheva AA. Technological processes of manufacture of corset and underwear products. Moscow, 162 (2013)
9. Ivkin MP. Improving the methods of ergonomic design of corsetry, taking into account the characteristics of the physique of female figures. Abstract of dissertation for the degree of candidate of technical sciences. Moscow State University of Design and Technology. Moscow, 24 (2010)
10. Medvedev IN, Skorjatina IA, Zavalishina SYu. Vascular control over blood cells aggregation in patients with arterial hypertension with dyslipidemia. *Cardiovascular therapy and prevention*, **15(1)**:4-9 (2016)
11. Zavalishina SYu, Medvedev IN. Features aggregation erythrocytes and platelets in old rats experiencing regular exercise on a treadmill. *Advances in gerontology*, **29(3)**:437-441 (2016)
12. Zavalishina SYu. Physiological Dynamics of Spontaneous Erythrocytes' Aggregation of Rats at Last Ontogenesis. *Annual Research & Review in Biology*, **13(1)**:1-7. DOI: 10.9734/ARRB/2017/33616 (2017)
13. Zavalishina SY. Restoration of Physiological Activity of Platelets in New-Born Calves With Iron Deficiency. *Biomed Pharmacol J*, **10(2)**:711-716. DOI: <http://dx.doi.org/10.13005/bpj/1160> (2017)
14. Skoryatina IA, Zavalishina SYu. Impact of Experimental Development of Arterial Hypertension and Dyslipidemia on Intravascular Activity of Rats' Platelets. *Annual Research & Review in Biology*, **14(5)**:1-9. DOI: 10.9734/ARRB/2017/33758 (2017)
15. Bikbulatova AA, Andreeva EG, Medvedev IN. Platelets' Functional Peculiarities in Persons of the Second Mature Age with Spinal Column Osteochondrosis of the Second Degree. *Annual Research & Review in Biology*, **21(1)**:1-9. doi: 10.9734/ARRB/2017/37795 (2017)
16. Skoryatina IA, Zavalishina SYu. A Study of the Early Disturbances in Vascular Hemostasis in Experimentally Induced Metabolic Syndrome. *Annual Research & Review in Biology*, **15(6)**:1-9. doi: 10.9734/ARRB/2017/34936 (2017)
17. Tashpulatov SSh, Andreeva EG. Theoretical foundations of manufacturing garments. Tashkent, 224 (2017)
18. Rogozhin AYu, Guseva MA, Andreeva EG. A simulation model of the process of shaping the surface of clothing. *Design and technology*, **63(105)**:47-49 (2018)
19. Andreeva EG, Mokeyeva NS, Glushkova TV, Kharlova ON, Chulkova EN. Rehabilitation and prevention of disability: clothes and corrective devices: Handbook. Moscow, 90 (2010)
20. Csovári S, Andyal T, Strenger J. Blood

- antioxidative parameters and their diagnostic value in elderly patients. *Laboratory business*,**10**:9-13 (1991)
21. Lenchenko E, Lozovoy D, Strizhakov A, Vatnikov Y, Byakhova V, Kulikov E, Sturov N, Kuznetsov V, Avdotin V, Grishin V. Features of formation of *Yersinia enterocolitica* biofilms. *Veterinary World*, **12**(1):136-140 (2019)
  22. Vorobyeva NV. Physiological Reaction of Erythrocytes' Microrheological Properties on Hypodynamia in Persons of the Second Mature Age. *Annual Research & Review in Biology*, **20**(2):1-9. doi: 10.9734/ARRB/2017/37718 (2017)
  23. Kayumova RF, Bikbulatova AA. Correcting the figure of women's clothing. Patent for the utility model RU 27993, 17.07.2002.
  24. Bikbulatova AA, Andreeva EG. Method of determining requirements for therapeutic and preventive garments. *Sewing industry*,**1**:37-40 (2013)
  25. Bikbulatova AA, Martynova AI. To the question about the psychological comfort of clothing for special purposes. In the collection: from Science to service. New materials and technological processes at the enterprises of service. Materials X international scientific-practical conference, 108-110 (2005)
  26. Bikbulatova AA, Andreeva EG. Designing clothing for people with disabilities (the formation of the educational program). *Natural and technical Sciences*,**10**(88):361-364 (2015)
  27. Medvedev IN, Amelina IV. Evaluation of the relationship between chromosome aberrations and transcription activity of nucleolus organizer regions in indigenous Population of the Kursk Region. *Bulletin of Experimental Biology and Medicine*,**149**(3):332-336 (2010)
  28. Bikbulatova AA. Dynamics of Locomotor Apparatus' Indices of Preschoolers with Scoliosis of I-II Degree Against the Background of Medicinal Physical Training. *Biomed Pharmacol J*,**10**(3). Available from: <http://biomedpharmajournal.org/?p=16762> (2017)
  29. Glagoleva TI, Zavalishina SYu. Physiological Peculiarities of Vessels' Disaggregating Control over New-Born Calves' Erythrocytes. *Annual Research & Review in Biology*,**19**(1): 1-9. DOI: 10.9734/ARRB/2017/37232 (2017)
  30. Skoryatina IA, Zavalishina SYu. A Study of the Early Disturbances in Vascular Hemostasis in Experimentally Induced Metabolic Syndrome. *Annual Research & Review in Biology*,**15**(6):1-9. doi: 10.9734/ARRB/2017/34936 (2017)
  31. Medvedev IN, Skoryatina IA. Platelet hemostasis dynamics in simvastatin-treated patients with arterial hypertension and dyslipidemia. *Russian Journal of Cardiology*,**1**(81):54-58 (2010)
  32. Medvedev IN, Danilenko OA. Complex correction of vascular hemostasis in patients with arterial hypertension, metabolic syndrome, and recent ocular vessel occlusion. *Russian Journal of Cardiology*,**4**:15-19 (2010)
  33. Medvedev IN. Correction of primary hemostasis in patients suffering from arterial hypertension with metabolic syndrome. *Klinicheskaja meditsina*,**85**(3):29-33 (2007)
  34. Medvedev IN, Gromnatskii NI, Volobuev IV, Osipova VM, Storozhenko MV. Correction of thrombocyte-vascular hemostasis in metabolic syndrome. *Klinicheskaja meditsina*,**84**(1):46-49 (2006)
  35. Oshurkova JuL, Glagoleva TI. Physiological Activity of Platelet Aggregation in Calves of Vegetable Feeding. *Biomedical & Pharmacology Journal*,**10**(3):1395-1400 (2017)
  36. Glagoleva TI, Zavalishina SYu. Aggregation of Basic Regular Blood Elements in Calves during the Milk-feeding Phase. *Annual Research & Review in Biology*,**17**(1):1-7. doi: 10.9734/ARRB/2017/34380 (2017)
  37. Bikbulatova AA, Karplyuk AA, Tarasenko OV. Model of Activities of the Resource Training Center of the Russian State Social University in Terms of Professional Orientation and Employment of Persons with Disabilities. *Psikhologicheskaya nauka i obrazovanie*,**22**(1): 26-33 (2017)
  38. Belozerova TB, Agronina NI. The Technologies of Performing Social Services in Russia by Social Service Institutions (Evidence from Kursk and Belgorod Regions). *Prensa Med Argent*,**103**:5 doi: 10.4172/lpma.1000261 (2017)
  39. Getmanceva VV, Pakhomova TA, Andreeva EG. The preferences of children clothing. *Sewing industry*,**2**:34-36 (2010)
  40. Guseva MA, Petrosova IA, Andreeva EG, Saidova SA, Tutova A.A. Investigation of the system "man-clothes" in dynamics for the design of ergonomic clothing. *Natural and Technical Sciences*,**11**:513-516 (2015)
  41. Medvedev IN, Gromnatskii NI. Normodipin in correction of platelet rheology in hypertensive patients with metabolic syndrome. *Terapevticheskii Arkhiv*,**77**(6):65-68 (2005)
  42. Skoryatina IA, Zavalishina SYu, Makurina ON, Mal GS, Gamolina OV. Some aspects of Treatment of Patients having Dislipidemia on the Background of Hypertension. *Prensa Med Argent*,**103**:3. doi: 10.4172/lpma.1000250 (2017)
  43. Medvedev IN, Gromnatskii NI, Mokhamed A.-ZE. Comparative Assessment of Effects of

- Qadropil and Enalapril on Intravascular Activity of Platelets in Hypertensive Patients With Metabolic Syndrome. *Kardiologija*, **44**(12):44-46 (2004)
44. Suleymanov SM, Usha BV, Vatnikov YA, Sotnikova ED, Kulikov EV, Parshina VI, Bolshakova MV, Lyshko MU, Romanova EV. Structural uterine changes in postpartum endometritis in cows. *Veterinary World*, **11**(10):1473-1478 (2018)
45. YouseûM, HoseiniSM, VatnikovYA, NikishovAA, KulikovEV. Thymol as a new anesthetic in common carp (*Cyprinus carpio*): Efficacy and physiological effects in comparison with eugenol. *Aquaculture*, **495**:376-383 (2018)
46. Tkacheva ES. Physiological Features of Platelets in Milk and Vegetable Nutrition Piglets. *Biomedical & Pharmacology Journal*, **11**(3):1437-1442. <http://dx.doi.org/10.13005/bpj/1508> (2018)