

# THE INFLUENCE OF HARMALA AND KARELINIA CASPIA ON THE IMMUNE STATUS FOR ANEMIA IN EXPERIMENT

**Khabibullayev B.B.<sup>1</sup>, Batyrbekov A.A.<sup>2</sup> (Republic of Uzbekistan)**

**Email: Khabibullayev546@scientifictext.ru**

<sup>1</sup>Khabibullaev Behzod Bakhodirovich - Candidate of Medical Sciences, Senior Researcher;

<sup>2</sup>Batyrbekov Akram Anvarovich - Doctor of Medical Sciences, Professor,

REPUBLICAN SCIENTIFIC CENTER OF IMMUNOLOGY  
OF THE MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN,  
TASHKENT, REPUBLIC OF UZBEKISTAN

**Abstract:** the influence of Garmala and Karelinia of the Caspian on the primary immune response to erythrocytes of the sheep in mice with hemolytic anemia induced by phenylhydrazine was studied. It was found that in the process of developing anemia, the total number of antibody-forming cells in the spleen of mice decreases 3.3 times. Under the influence of Garmaly, the inhibited immune response rises 2.2 times, and under the influence of Karelinia Caspian - 1.7 times. In anemic animals, the total number of cells in the spleen is significantly increased by a factor of 1.4, and with the introduction of plant remedies this indicator decreases. It is concluded that Garmala and Karelinia Caspian have an immunomodulatory effect in anemic animals.

**Keywords:** Harmala, Karelinia caspia, anemia, immune response.

## ВЛИЯНИЕ ГАРМАЛЫ И КАРЕЛИНИИ КАСПИЙСКОЙ НА ИММУННЫЙ СТАТУС ПРИ АНЕМИИ В ЭКСПЕРИМЕНТЕ

**Хабибуллаев Б.Б.<sup>1</sup>, Батырбеков А.А.<sup>2</sup> (Республика Узбекистан)**

<sup>1</sup>Хабибуллаев Бехзод Баходирович - кандидат медицинских наук, старший научный сотрудник;

<sup>2</sup>Батырбеков Акрам Анварович - доктор медицинских наук, профессор,

Республиканский научный центр иммунологии  
Министерства здравоохранения Республики Узбекистан,  
г. Ташкент, Республика Узбекистан

**Аннотация:** исследовали влияние Гармалы и Карелинии каспийской на первичный иммунный ответ к эритроцитам барана у мышей с гемолитической анемией, индуцированной фенолгидразином. Установлено, что в процессе развития анемии общее число антителообразующих клеток в селезенке мышей уменьшается в 3,3 раза. Под воздействием Гармалы угнетенный иммунный ответ повышается в 2,2 раза, а под воздействием Карелинии каспийской - в 1,7 раза. У анемичных животных общее число клеток в селезенке достоверно повышается в 1,4 раза, а при введении растительных средств данный показатель снижается. Делается заключение, что Гармала и Карелиния каспийская обладают иммуномодулирующим действием у анемичных животных.

**Ключевые слова:** Гармала, Карелиния каспийская, анемия, иммунный ответ.

It is known, that herbal remedies use at cure different disease, in particularly, anemia [1] and ability modulation immunological reactions [2].

The aim of the work is to study the influence of the Harmala and Karelinia caspia on immunogenesis in anemia. In the experiments, white mongrel mice of 2-3 months of age weighing 20-22 g were used. For modeling hemolytic anemia mice daily in flow 3 days intraperitoneally introduce phenilgidrazin at a dose of 30 mg/kg. Than it intraperitoneally immunized with sheep erythrocytes (SE) at a dose of  $2 \times 10^8$  and after 5 days the number of antibody-producing cells (ABPC) of spleen was determined [3]. It was established, that in the spleens of mice control group are formed  $4956,3 \pm 272,3$  ABPC, and in process formation the anemia it number in spleen as compared with control group decrease in 3,28 times. Under the influence of Harmala number of ABPC on spleen at mice with anemia compared with untreated group increases in 2,24 times. In group animal with anemia, recipient Karelinia caspia, number ABPC in spleen equally  $2587,5 \pm 145,7$ , that in 1,71 times higher than in immune deficit mice. Stimulated activity Harmala in attitude population ABPC in spleen reliable higher than in Karelinia caspia. Thus, Harmala and Karelinia caspia possess ability increases oppressed immune response to SE in mice with hemolytic anemia.

When calculating ABPC for 1 million spleen cells established, that in control group he equally  $34,3 \pm 2,2$ , but formation hemolytic anemia this index decrease in 4,45 times. Under the influence of Harmala number ABPC for 1 million spleen cells in anemia animal increases in 2,65 times as compared with immune deficit group. Stimulated activity Harmala reliable higher than at Karelinia caspia. Thus, when calculating the ABPC for both the whole spleen and 1 million splenocytes, the ability of the studied herbal remedies to significantly enhance immunological reactivity in mice with hemolytic anemia was established.

Table 1. Effect of Harmala and Karelinia caspia on the immune response to sheep erythrocytes in mice with hemolytic anemia ( $M\pm m$ )

Group	Dose, mg / kg	Number of NCS $\times 10^6$	IR	The number of ABPC at			
				whole spleen	IR	$10^6$ cells of the spleen	IR
1. control (n = 8)	-	145,5 $\pm$ 4,2	-	4956,3 $\pm$ 272,3	-	34,3 $\pm$ 2,2	-
2. anemia (n=8)	-	200,1 $\pm$ 9,8 <sup>a</sup>	+1,38	1512,5 $\pm$ 83,9 <sup>a</sup>	-3,28	7,7 $\pm$ 0,7 <sup>a</sup>	-4,45
3. anemia + Harmala (n=8)	50,0	167,3 $\pm$ 4,8 <sup>ab</sup>	+1,15	3387,5 $\pm$ 187,3 <sup>ab</sup>	+2,24	20,4 $\pm$ 1,3 <sup>ab</sup>	+2,65
4. anemia + KC (n=8)	100,0	180,4 $\pm$ 5,1 <sup>a</sup>	+1,24	2587,5 $\pm$ 145,7 <sup>abc</sup>	+1,71	15,1 $\pm$ 1,0 <sup>abc</sup>	+2,0

Note: KC - Karelinia caspia, NCS - nucleated cells of the spleen; ABPC - antibody-producing cells; IR - the index of the ratio: (-) - in relation to 1 gr., (+) - in relation to 2 gr., A - authentically to 1 gr., B - authentically to 2g., C - authentically to 3g.

The total number of NCS in the control is  $145,5 \pm 4,2 \times 10^6$ , and at mice with hemolytic anemia this index reliable increases by 1,38 times. In groups animals with anemia, receipt herbal remedies, observed decreases level of splenocytes, but not to control meaning. In group, receipt Harmala, number of NCS equally  $167,3 \pm 4,8 \times 10^6$ , than in 1,15 times higher, than control group. This index reliable decreases, than in anemia animal. Under the influence Karelinia caspia the number of NCS although decreases, but reliably not distinguish from the anemia animal.

Consequently, studding herbal remedies possess modulating action at anemia animal: on the one hand they increases depressing immunologic reactivity organism, but another hand, on the contrary, decrease higher meaning on level spleen's cells.

#### Reference / Список литературы

1. Ledina A.V. Plant preparation in cure iron deficit anemia: survey of literature //Gynecology.- Moscow. - 2004. № 5. P. 222-227 [in Russian].
2. Khobrakova V.B., Shobolova A.B., Olennikov D.N. Influence fractions, distinguished from Sofora yellow, on antibody production //Bulletin VCSC SD RAMS, 2010. № 3 (73). P. 275-277 [in Russian].
3. Jerne N.K., Nordin A.A. Plaque-formation in agar by single antibody producing cells // Science, 1963. Vol. 105. P. 405-407.