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GIF (Australia) = 0.564	ESJI (KZ) = 4.102	IBI (India) = 4.260
JIF = 1.500	SJIF (Morocco) = 2.031	

SOI: 1.1/TAS DOI: 10.15863/TAS

International Scientific Journal

Theoretical & Applied Science

p-ISSN: 2308-4944 (print) **e-ISSN:** 2409-0085 (online)

Year: 2018 **Issue:** 05 **Volume:** 61

Published: 30.05.2018 **http://T-Science.org**

SECTION 28. Pharmaceutical Sciences.
UDC: 612.017

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THE INFLUENCE OF PLANT MEANS TO ANTIBODY PRODUCTION IN SYSTEM IN VITRO

Abstract: *It was established, that plant means Harmala, Karelinia caspia, sukromed, provid, biomayrin and bioftizoetam, possess ability increase immune response to sheep erythrocytes in system in vitro on intact mice and animals with secondary immunodeficit: acuity toxic hepatitis, hemolytic anemia, radiation sickness.*

Key words: *Harmala, Karelinia caspia, sukromed, provid, biomyrine, bioftizoetam, in vitro, secondary immunodeficit.*

Language: *English*

Citation: Khabibullaev BB, Batyrbekov AA (2018) THE INFLUENCE OF PLANT MEANS TO ANTIBODY PRODUCTION IN SYSTEM IN VITRO. ISJ Theoretical & Applied Science, 05 (61): 379-382.

Soi: http://s-o-i.org/1.1/TAS-05-61-64 ***Doi***: crossref https://dx.doi.org/10.15863/TAS.2018.05.61.64

Introduction

It is known, what immune modulated preparations apply at many pathological conditions [1, p. 149; 2, p. 241; 3, p. 385; 4, p. 157; 5. P. 34; 7, p. 1001; 8, p. 24; 9, p. 117; 10, p. 95].

The aim of the work is to study the influence series plant means to antibody production in vitro at intact and immune deficit animals.

Material and methods.

The object research appear: extract harmala (Peganum harmala), extract Karelinia caspia, provid (distinguish from plant *Vitis vinifera L.*), sukromed (distinguish from plant *Vitis vinifera L.*), biotizoetham (distinguish from plant *Amaranthus L.*) and biomyrine (distinguish from plant *Amaranthus L.*). In the experiments, white mongrel mice of 2-3 months of age weighing 20-22 g were used. From spleens immunized with erythrocytes of a ram (ER) mice (normal or with secondary immune deficit) prepare suspension of cells, bring their to 1 million in 1 ml. To solutions of cells add research means (in microg/ml), incubation 30 minute at temperature $+37^0$C and them was calculated numbers antibody-forming cells (ABPC) in the spleen by a method of Jerne N.K. and Nordin A.A.(1963) [6,p.405]. In this model happen immediate contact researched of means with immune competent cells.

Acute toxic hepatitis (ATH) call at mice with help hepatic toxically mean - CCl_4, which introduce under skin in flow 3 days in 20% oil solution on 0,2 ml. In last day introduce of CCl_4 the mice immunized with erythrocytes of a ram (ER) at a dose of 2×10^8, on 5 days calculated numbers ABPC in the spleen. Hemolytic anemia call with help fenilgidrazine, which introduce intraperitoneally at a dose 30 mg/kg every day in flow 3 days. In last day introduce of fenilgidrazine mice immunized with erythrocytes of a ram (ER) at a dose of 2×10^8, on 5 days calculated numbers ABPC in the spleen. To creation radiation sickness (RS) mice once completely irradiated at a dose of 5 Gy. After 3 days, they were intraperitoneally immunized with erythrocytes of a ram (ER) at a dose of 2×10^8 and after 4 days the number ABPC in the spleen was determined.

Results and discussion.

In first serial research immune active property extracts of harmala and Karelinia caspia (Table 1). At incubation of spleen cells of intact mice with herbal preparations happen authentically increased number of ABPC in the spleen suspension. Ander influence harmala the number of ABPC increases in 1.42 times, Karelinia caspia - in 1,30 times. Consequently, short time 30 minutes contact plant means with splenocytes significantly increases population ABPC at mice of full value immune system.

Appear interest investigated the effect of herbal remedies on number ABPC in spleen in vitro at secondary immune deficit condition. At ATH number of ABPC per 1 million splenocytes on level

with control decrease in 4,10 times. In animal, which receive harmala, number of ABPC increases in 1,35 times, and Karelinia caspia - in 1,20 times.

Thus, herbal remedies possess ability increase number of ABPC system in vitro at mice with ATH. Next, the effect of plant remedies on number of ABPC system in vitro was studied in mice with hemolytic anemia. If in control on 1 million number of splenocytes equally 16,8±0,5, that in mice with hemolytic anemia given index decrease in 3,36 times. When add to suspension splenocytes mice with anemia herbal remedies, number of ABPC reliable increase: under affect harmala - in 1,45 times, Karelinia caspia - in 1,37 times.

Thus, studying herbal remedies ability increase number of ABPC system in vitro at mice with hemolytic anemia. In anemia stimulated activity studying example higher compare with ATH.

Next, we studied the effect of herbal remedies number of ABPC system in vitro in suspension splenocytes mice with RS. If in control the number of ABPC equally 23,1±0,7, that in with RS - in 9,24 times less. As in previous models secondary immune deficit, all studying herbal remedies possess ability reliable increase number of ABPC in suspension splenocytes mice with RS system in vitro. Under affect harmala number of ABPC increase - in 2,0 times, Karelinia caspia - in 1,76 times. Thus, harmala and Karelinia caspia abilited increase immunogenesis in vitro.

Table 1

The Influence of Harmala and Karelinia caspia on the number of ABPC in system in vitro at intact and immune deficit animals (M±m)

Group	Dose, mkg /ml	The number of ABPC at 10^6 of splenocytes	IR
Intact mice			
1. control (n=8)	-	18,6 0,6	-
2. harmala (n=8)	50,0	26,5 0,8[a]	+1,42
3. Karelinia caspia (n=8)	100,0	24,1 0,7[a]	+1,30
Acute toxic hepatitis (ATH)			
1. control (n=8)	-	20,1 0,7	-
2. ATH (n=8)	-	4,9 ± 0,2[a]	-4,10
3. ATH + harmala (n=8)	50,0	6,6 0,4[ab]	+1,35
4. ATH + Karelinia caspia (n=8)	100,0	5,9 0,2[ab]	+1,20
Hemolytic anemia			
1. control (n=8)	-	16,8 0,5	-
2. anemia (n=8)	-	5,1 ± 0,2[a]	-3,36
3. anemia + harmala (n=8)	50,0	7,4 0,4[ab]	+1,45
4. anemia + Karelinia caspia (n=8)	100,0	7,0 0,3[ab]	+1,37
Radiation sickness (RS)			
1. control (n=8)	-	23,1 0,7	-
2. RS (n=8)	-	2,5 ± 0,3[a]	-9,24
3. RS + harmala (n=8)	50,0	5,0 0,5[ab]	+2,0
4. RS + Karelinia caspia (n=8)	100,0	4,4 0,4[ab]	+1,76

Note: 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.

Then we studied effect in immune system following herbal remedies: sukromed, provid, biomyrine and biotizoetham (Table 2). In intact mice in control group on 1 million splenocytes arrive 17,5±0,5 of ABPC.

Table 2

Effect of plant means on the number of ABPC in system in vitro at intact and immune deficit animals (M±m)

Group	Dose, mkg /ml	The number of ABPC at 10^6 of splenocytes	IR
Intact mice			
1. control (n=8)	-	17,5 ± 0,5	-
2. Sukromed (n=8)	25,0	24,3 ± 0,5[a]	+1,39
3. Provid (n=8)	25,0	23,0 ± 0,8[a]	+1,31
4. Biomyrine (n=8)	75,0	22,0 ± 0,7[a]	+1,26

5. Bioftizoetham (n=8)	75,0	25,5 ± 0,6[a]	+1,46
Acute toxic hepatitis (ATH)			
1. control (n=8)	-	21,8 ± 0,5	-
2. ATH (n=8)	-	4,8 ± 0,4[a]	-4,54
3. ATH + Sukromed (n=8)	25,0	6,3 ± 0,3[ab]	+1,33
4. ОТГ + Provid (n=8)	25,0	6,0 ± 0,3[ab]	+1,25
5. ОТГ + Biomyrine (n=8)	75,0	5,8 ± 0,3[ab]	+1,21
6. ОТГ + Bioftizoetham (n=8)	75,0	6,5 ± 0,4[ab]	+1,35
Hemolytic anemia			
1. control (n=8)	-	18,3 ± 0,5	-
2. anemia (n=8)	-	5,9 ± 0,3[a]	-3,10
3. anemia + Sukromed (n=8)	25,0	8,5 ± 0,5[ab]	+1,44
4. anemia + Provid (n=8)	25,0	7,8 ± 0,4[ab]	+1,32
5. anemia + Biomyrine (n=8)	75,0	7,4 ± 0,3[ab]	+1,25
6. anemia + Bioftizoetham (n=8)	75,0	9,0 ± 0,3[ab]	+1,52
Radiation sickness (RS)			
1. control (n=8)	-	24,3 ± 0,6	-
2. RS (n=8)	-	2,6 ± 0,3[a]	-9,35
3. RS + Sukromed (n=8)	25,0	5,0 ± 0,3[ab]	+1,92
4. RS + Provid (n=8)	25,0	4,8 ± 0,3[ab]	+1,85
5. RS + Biomyrine (n=8)	75,0	4,3 ± 0,3[ab]	+1,65
6. RS + Bioftizoetham (n=8)	75,0	5,8 ± 0,4[ab]	+2,23

Note: 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.

Under affect sukromed number of ABPC increases by 1,39 times, provid - by 1,31 times, biomyrine - by 1,26 times, biotizoetham - by 1, 46 times. Consequently, short time 30 minutes contact plant means with splenocytes on 26-46% increases population ABPC at mice of full value immune system.

Appear interest investigated the effect of herbal remedies on number ABPC in spleen in vitro at secondary immune deficit condition. At ATH the number ABPC on 1 million splenocytes on level with control decrease in 4,54 times. If in suspension splenocytes, which receive from mice c ATH in vitro add herbal remedies, that the number ABPC reliable increase. In group, receive sukromed, the number ABPC increases in 1,33 times, provid - 1,25 times, biomyrine - 1,21 times, biotizoetham - 1, 35 times. Thus, studying herbal remedies possess ability increase number of ABPC system in vitro at mice with ATH.

Next, we studied the effect of herbal remedies number of ABPC system in vitro in suspension splenocytes mice with hemolytic anemia. If in control the number of ABPC on 1 million splenocytes equally 18,3±0,5, that in with anemia - in 3,10 times less, that is lesser degree, that in ATH (IR=-4,54). When add to suspension splenocytes mice with anemia the sukromed, the number of ABPC compare with immune deficit mice reliable increases by 1,44 times, provid - by 1,32 times, biomyrine - by 1,25 times, biotizoetham - 1, 52 times.

It was established, that if in control the number of ABPC equally 24,3±0,6, that in mice with RS - in 9,35 times less. All studying herbal remedies ability reliable increase number of ABPC system in vitro at mice with RS. Ander influence sukromed the number of ABPC increases in 1,92 times, provid - by 1,85 times, biomyrine - by 1,65 times, biotizoetham - 2,23 times.

On the basis of the data obtained, it can be concluded that the studied herbal remedies have the ability to increase number of ABPC system in vitro in suspension splenocytes in normal mice and in animals with secondary immune deficit condition (acute toxic hepatitis, hemolytic anemia, radiation sickness).

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