

THE ACTION OF STREPTOMYCETES BIOMASSES AT IMMUNOLOGICAL EFFICACY AND SOME BIOCHEMICAL BLOOD INDEXES OF VACCINATED CHICKENS

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Abstract: *Today in many countries is the large development and fruit production of biologically active substances, growth stimulators, premixes, preparations of microorganisms that are used to increase the percentage of viability in animals and birds, body mass, immune status and organism physiological resistance. As biologically active status in many groups of actinomycetes are streptomycetele.*

Use of actinomycetes as a source of biologically active substances is one of the main prposes of studing. So was studded the biological blood properties and immune post vaccinated status of chickens which was feeding with supplement of biomass of streptomycetes.

Data are presented confirming the low post-vaccination immune efficiency in chickens vaccinated at one day old and immune stimulating effect in case the vaccine was administered in combination with biomass streptomycetes by recommended schedule.

Key words: *streptomycetes, antibody titre, immunostimulating, body weight, albumins, globulins, total proteins, biomass.*

MATERIAL AND METHODS

Investigations on obtaining and examining biological and biochemical properties of streptomycetes and biomass streptomycetes composition was performed CNMN (National Collection of Nonpathogenic Microbiology) Institute of Microbiology and Biotechnology, Academy of Sciences of Moldova.

Basely strains studied material was obtained Dulone mineral medium for 3 days at 27° C temperature with agitation. Subsequently (biomass) of streptomycetes BM-11 was separated by centrifugation of liquid culture. Quantity BM-11 was determined by weighing method.

The strain of *Streptomyces canosus* CNMN-Ac-03 was used after γ -irradiation where and kept in laboratory conditions for more than 5 years and after numerous passages. Absolute value of protein mass was 38.5 to 40.0% , the composition of the essential amino acids was 52.0 to 53.0% and 50.0 to 52.0% immunoactive amino acids. Total lipid ratio was at 14.0 to 14.8%. The phospholipids composition was 21.5 to 22.0% and 14.0 to 14.3% starriness.

This study aimed at assessing the immunological efficiency vaccine strains of "PA" and "Winterfield 2512" which was administrated at the one day age in combination with biomass ratio and streptomycetes and its action on some blood biochemical indices.

Investigations were conducted on six groups of one day chickens, cross "Hi Land", separated 20 chickens in each group who were kept in analog conditions as follows:

First group – was a control group, the second group - the chickens who have received only biomass ratio streptomycetes, the III-rd group - chickens vaccinated with vaccine strain "PA" with the addition of biomass of streptomycetes, the IV-th group – the chickens vaccinated with strain "Winterfield 2512" with the addition of biomass of streptomycetes, the V-th group - only vaccinated chickens with vaccine strain "PA", and the VI-th group - chickens vaccinated with vaccine strain "Winterfield 2512.

Vaccination of chickens was carried out at the age of one day, the vaccine was administered with drinking water. Streptomycetes biomass was given in a report 1g/1kg combined feed up to 21 days age and 2 g / 1 kg combined feed up to 21-45 days age.

After 15, 30 and 45 days post vaccination in each group were sacrificed five chickens and examined the stock weight, was collected blood samples for biochemical examination and serum samples to determine post vaccination antibody titers.

RESULTS AND DISCUSSIONS

The results of serological investigations are presented in table 1, where we see that the chickens from groups post vaccine antibody control group were not detected in anyone of the examinations group, because chickens have been obtained from vaccinated hen's eggs.

At 15-th day after vaccination antibody levels were established in the vaccinated chickens groups with strain "PA" and "Winterfield 2512" in combination with biomass of streptomycetes in serum dilution 1:50 that formed two symbols "+" of the four possible.

Antibody levels equivalent to one symbol "+" were established in the group's vaccinated chickens only with vaccine strains "PA" and "Winterfield 2512" without the addition of streptomycetes biomass.

At the 30-th day after the vaccine, antibody levels that constituted one symbol "+" have been detected in chickens vaccinated with strains "PA" and "Winterfield 2512" in combination with biomass streptomycetes. In another groups, post vaccine antibody levels were not detected.

Also at the 45-th day after vaccination in now one group of vaccinated chickens was detected post vaccine antibody.

Table 1. The level of antibody titers in chickens vaccinated against infectious bursal disease with substitution in combined food biomass of streptomycetes

Nr. gr.	Nr. of chickens	Age vaccinated chickens (days)	Vaccine strain / biomass streptomycetes	Time management streptomycetes biomass (days)	Serum dilution 50/100	Examination period (days)		
						15	30	45
I	20	1	C	-	50 / 100	- / -	- / -	- / -
II	20	1	C/ BM	45	50 / 100	- / -	- / -	- / -
III	20	1	PA / BM	45	50 / 100	++ / -	+ / -	- / -
IV	20	1	Winterfield / BM 2512	45	50 / 100	++ / -	+ / -	- / -
V	20	1	PA / -	45	50 / 100	+ / -	- / -	- / -
VI	20	1	Winterfield / -2512	45	50 / 100	+ / -	- / -	- / -

In the table 2 are presented some of the blood biochemical indices in chickens vaccinated with strains of "PA" and "Winterfield 2512" which were administered separately and fill in combined food streptomycetes biomass.

Analyzing data from the table 2 may be noted that at 15 days after vaccination, on chickens from control group total protein was 14.6 g / l, albumins 11.4 g / l and 3.2 g / l globulins. The highest protein level group was established at chickens in the control group which received with feeding biomass of streptomycetes. The value of these indices was respectively, total protein -22.6 g / l, albumins and globulins 13.4 g / l and 9.2 g / l properly.

A higher protein level was established in the chickens group which was vaccinated with strain "PA" complemented with the biomass of streptomycetes, contained 20.9 g / l. In the other groups this index ranged from 11g / l up to 16.5 g / l.

Albumins and globulins ranged between 13.2 and 9.49 g / l, the lowest being 6.8 g / l in group chickens were vaccinated with strain "Winterfield 2512" without the addition of the ratio of biomass of streptomycetes.

On the 30-th day after vaccination the total protein at the chickens from the control group were 15.1 g / l. In the offspring of experimental groups, this index was higher in groups vaccinated chickens with vaccines "PA" and "Winterfield 2512" which contain 18.6 and 21.6 g / l, but in the group of chickens vaccinated only with vaccines without streptomycetes biomass this index was respectively 17 and 16 g / l. The level of albumins and globulins in control group was 10.9 g / l. Highest level of albumins was established in group of chickens were vaccinated with strain "Winterfield 2512" in combination with biomasses of streptomycetes, representing respectively 15.8 g / l and globulins level in the group of chickens that received vaccine 'AP' without streptomycetes biomass was 39.3%. The lowest albumins level was established in group of chickens vaccinated with strain "Winterfield 2512" without biomass of streptomycetes being 9.7 g / l and the lowest level of globulins - 4.1 g / l was established in the control group.

For examinations performed at the 45-th day after vaccination in chickens of control group, protein level was 16.3 g / l, but in the groups that were vaccinated with strains of "PA" and "Winterfield 2512" with added biomass of streptomycetes this index ranged from 18.2 up to 18.6 g / l.

Slightly fewer indexes were established in the group of chickens that received only the vaccine without streptomycetes biomass ratio, representing a change of values from 17.6 and 15.1 g / l.

So as albumins and globulins level was higher in experimental groups of chickens, where vaccines were administered in combination with the biomasses of streptomycetes

At the same time the highest level of globulins was recorded in chickens group vaccinated with strain "Winterfield 2512" ration which was supplemented with biomass streptomycetes, being 8.1 g / l, while the smallest index - 5,2 g / l was established in chickens group vaccinated with strain "PA".

Table 2. Blood biochemical indices in chickens vaccinated against infectious bursitis with feeding of streptomycetes biomass

Gr. nr.	Nr. of chickens	Vaccines strains / Biomass of streptomycetes	Biochemical indices of the blood (days after vaccination)														
			15				30				45						
			Total proteins g/l	Albumins g/l	Albumins %	Globulins g/l	Globulins %	Total proteins g/l	Albumins g/l	Albumins %	Globulins g/l	Globulins %	Total proteins g/l	Albumins g/l	Albumins %	Globulins g/l	Globulins %
I	20	C	14,6±0,36	11,4±0,26	78,0	3,2±0,45	21,9	15,1±0,17	10,2±0,17	67,5	4,9±0,17	32,4	16,3±0,23	10,2±0,15	62,5	6,1±0,11	37,4
II	20	C / BM	22,6±0,26** *	13,4±0,25* *	59,2	9,2±0,17** *	40,7	16,3±0,26*	12,2±0,2**	74,8	4,1±0,25	25,1	18,4±0,25* *	12,0±0,34**	65,2	6,4±0,15	34,7
III	20	PA / BM	20,9±0,17** *	13,2±0,1**	63,1	7,7±0,2***	36,8	18,6±0,25** *	12,5±0,26**	67,2	6,1±0,15**	32,7	18,2±0,32* *	10,7±0,32	58,7	7,5±0,20**	41,2
IV	20	Winter/BM	12,5±1,05	9,4±0,52*	75,2	3,1±0,17	24,8	21,6±0,26** *	15,8±0,25** *	73,14	5,8±0,2*	36,8	18,6±0,15* *	10,5±0,14	56,4	8,1±0,15** *	43,5
V	20	PA / -	16,2±0,81	12,1±0,55	74,6	4,1±0,1	25,3	17,0±0,43*	10,5±0,2	61,7	6,5±0,34*	38,2	17,6±0,25* *	12,4±0,15** *	70,4	5,2±0,25* *	29,5
VI	20	Winter / -	11,0±0,36**	6,8±0,1***	61,8	4,2±0,2	38,1	16,0±0,1*	9,7±0,2	60,6	6,3±0,17**	39,3	15,1±0,32* *	8,7±0,23**	57,6	6,4±0,25	42,3

*** p>0,001; ** p>0,01; * p>0,05

CONCLUSIONS

1. Vaccination against infectious bursitis of one day chickens dasen, t stimulate a antibody level that could protect chickens from disease contamination during critical age period (2-6 weeks).

2. The ratio suplining with biomass of streptomycetes have the positive affect at some biochemical indexes which increase the level of blood total protein, albumins and globulins.

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