

AN ATTEMPT TO INVESTIGATE THE POSSIBLE RELATION OF ANTIGENS OF LISTERIA MONOCYTOGENES AND STREPTOCOCCUS PYOGENES (GROUP A)

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The question of the importance of *Listeria* agglutinins in serum of healthy people or animals is still insufficiently studied. The fact, that in sera of patients with listeriosis are detected specific antibodies, does not indicate (3) that all antibodies reacting to *Listeria* antigens are indeed specific to *Listeria*. It is accepted that people and animals are enough capable of being infected with *Listeria* or other microorganisms which show a relatedness to *Listeria* antigens (1). *Listeria* antibodies in healthy people are quite often findings (2, 4, 5). Seeliger, H. (1963) reports certain group reactions between *Listeria monocytogenes* type 1, 2 and *Streptococcus faecalis*. He establishes antigenic relations between various strains of *Streptococcus faecalis* (serologic group D) and O-antigen (*Listeria* polysaccharide of serotypes 1, 4).

Minding the antigenic relation of *Listeria* to some Gram-positive bacteria the object of our present study was to investigate the relatedness between *Listeria* and streptococcus group A.

Material and methods

The experiment covered a number of rabbits divided into 3 groups: I — infected with a strain of *Listeria monocytogenes* (No. 5507) from the first serologic group by using the method of Anton, I. (conjunctivally); the strain has a proved pathogenicity towards white mice, rabbits and guinea pigs. II — infected i. m. with a strain *Streptococcus pyogenes* group A by using a definite scheme. III — infected with both bacterial cultures in combination.

A positive keratoconjunctival reaction was registered in the animals of Ist and IIIrd group.

In order to establish the humoral immune response we apply the reaction agglutination (*Listeria* Vidal) by using a method modified in the Institute of Infectious and Parasitic Diseases, Sofia, with a special antigen-diagnosticum produced there; also we apply antistreptolysin reaction after the classical method of Kalbac with streptolysin «O», same production as the aforementioned one. The reactions were performed before the infection, as well as on 15th, 30th and 45th day after the inoculation of cultures.

Results and discussion

The reaction agglutination, performed before infection of the animals, shew negative results in all animals. Those of the second group kept the negative result of the reaction till the end of the experiment. The rabbits from the first group had a titre of their antilisteria antibodies on the 15th and 30th day

Table I

Group exper. animals	Investigation							
	Before infection		After experimental infection					
			on 15 th day		on 30 th day		on 45 th day	
	Titre of Listeria Vidal	AST in U	Titre of Listeria Vidal	AST in U	Titre of Listeria Vidal	AST in U	Titre of Listeria Vidal	AST in U
I	(-)	10 U	from 1:640 to 1:1280	10 U	from 1:640 to 1:1280	10 U	from 1:320 to 1:640	10 U
II	(-)	under 10 U	(-)	from 20 U to 60 U	(-)	from 80 U to 100 U	(-)	from 125 U to 166 U
III	(-)	10 U	from 1:80 to 1:320	from 20 U to 80 U	from 1:80 to 1:160	from 30 U to 166 U	from 1:80 to 1:160	from 250 U to 333 U

(1/2aO and 1/2aH) between the intervals 1:640 and 1:1280, whereas on 45th day the titre went down to its twice-lower value. The animals from the IIIrd group had a comparatively lower titre (between 1:80 and 1:320) whereas on 30th and 45th day the titre had values between 1:80 and 1:160. Our study included *Listeria diagnosticum*s 4bO and 4bH, showing negative results in all animals, which corresponded to the group identity of the applied in our experiment *Listeria* strain.

Reaction antistreptolysis before infection shew a titre of 1:10 in only 2 of the animals whereas the titre of the rest animals was always under 1:10. The rabbits from the second group had an antistreptolysin titre between 20 U and 60 U on 15th day, between 80 U and 100 U on 30th day and between 125 U and 166 U on 45th day. The animals from the IIIrd group shew higher values of their antistreptolysin titre compared to those of the second one (15th day — between 20 U and 80 U; 30th day — between 80 U and 166 U; 45th day — between 250 U and 333 U).

The results of our investigation suggest that the streptococcus of group A have no antigenic relation to *Listeria monocytogenes* of first serologic group. However, they suppress the humoral immune response towards *Listeria* when applied in combination (streptococcus+*Listeria*) in the organism. On the contrary, *Listeria* stimulates the formation of antistreptococcal antibodies.

Our data show that the positive listeria Vidal is not resultant of hetero-antibodies induced by streptococcus of group A.

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ПОПЫТКА ВЫЯСНЕНИЯ АНТИГЕННОГО РОДСТВА МЕЖДУ *LISTERIA MONOCYTOGENES* И *STREPTOCOCCUS PYOGENES* ГРУППЫ А

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РЕЗЮМЕ

Проведено экспериментальное исследование антистрептолизинной реакции и листерийного Видала трех групп лабораторных животных, зараженных соответственно *Listeria monocytogenes* и *Streptococcus pyogenes* группы А, а также и комбинированно зараженных. Через определенные интервалы определялась динамика титров посредством листерийного Видала и антистрептолизинной реакции.

Проведенные исследования дают основание считать, что стрептококки группы А не имеют антигенного родства с *Listeria monocytogenes* первой серологической группы, но они подавляют гуморальный ответ по отношению к листериям при комбинированном введении в организм, в то время как листерии стимулируют образование антистрептококковых антител.