IMMUNODEPRESSIVE EFFECT OF *Mycoplasma laidlawii* ON HUMORAL ANTIBODY FORMATION IN MICE

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The effect of *Mycoplasma laidlawii* on humoral antibody formation against sheep's erythrocytes was studied in mice. The results showed that *M. laidlawii* has no appreciable immunodepressive effect on the formation of such antibodies. Its activating effect on mixed mycoplasma and virus infection in mice resistant to Rauscher virus probably cannot be attributed to suppression of the natural resistance of these animals to this virus.

The writers previously investigated the role of mycoplasmas in the genesis of virus leukemia in mice [1] and showed that in some cases mycoplasma infection altered the animals' response to virus infection. This effect depended on the type of virus, the type of mycoplasma, and the degree of sensitivity of the infected animals. For instance, two types of mycoplasmas tested (*M. fermentans* and *M. hominis* I) did not affect the frequency or times of appearance of myeloblastic leukemia in CC57W mice. At the same time *M. laidlawii* was shown to have some activating action in mixed mycoplasma and virus infection in experiments on (C57BL/6 × A/He) F_1 mice highly resistant to Rauscher virus only. It was postulated that one cause of this phenomenon may be suppression of the natural resistance of the mice to this virus by the mycoplasma (*M. laidlawii*).

In the present investigation the effect of *M. laidlawii* on humoral antibody formation against sheep's erythrocytes was studied in mice.

EXPERIMENTAL METHOD

Female CC57W mice and (C57BL/6 × A/He) F_1 hybrids aged 3-4 months were immunized by a single intraperitoneal injection of sheep's erythrocytes in doses of 125 and 500 million cells in a volume of 0.5 ml per mouse.

For the different groups of mice the above doses of erythrocytes were diluted: a) with nutrient medium used for cultivation of mycoplasmas [2]; b) with Rauscher virus; c) with a 24-h broth culture of *M. laidlawi* with a titer of 10^9 CFU/ml, or d) with a mixture of Rauscher virus and the same broth culture of *M. laidlawi*.

The infectious material was used in the following doses per mouse: 0.15 ml Rauscher virus (plasma) and 0.35 ml of broth culture of *M. laidlawii*. If necessary these doses of infectious material were diluted with medium for cultivation of mycoplasma until a volume of 0.5 ml per mouse was obtained.

The titer of Rauscher virus in the plasma used for the experiment was 10^4 LD_{50}/0.1 ml, as determined on sensitive BALB/cDe mice 3 months after infection.

Each group contained 10-12 mice. The animals were exsanguinated 5-7 days after injection of the antigen and their pooled sera were tested for the presence of antibodies against sheep's erythrocytes in the hemagglutination and hemolysis test. To determine the titers of hemagglutinins and hemolysins, the usual

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TABLE 1. Effect of M. laidlawii and Rauscher Virus on the Formation of Humoral Antibodies against Sheep's Erythrocytes on 7th Day After Mono- and Mixed Infection of Mice ($\log_2$, M ± m)

Mice	Dose of erythrocytes (millions)	Hemolysins				Hemagglutinins			
		intact mice	infected with Rauscher virus	infected with M. laidlawii	infected with Rauscher virus + M. laidlawii	intact mice	infected with Rauscher virus	infected with M. laidlawii	infected with Rauscher virus + M. laidlawii
CC57W	125	2,80	—	2,50	—	2,80	—	2,50	—
	500	2,60 ± 0,20	—	2,50	—	2,60 ± 0,20	—	2,80	—
(C57BL/6× A/He) F_1	125	2,70 ± 0,20	2,50	2,50	2,30 ± 0,20	2,80	2,80	2,50	2,30 ± 0,20
	500	2,80	2,80	2,50	2,50	2,80	2,80 ± 0,24	2,50	2,70 ± 0,21

method [3] was used, taking complete hemolysis in the tube and clearly visible agglutination of the erythrocytes in the well as a positive result. The mean results of 3 successive tests was calculated for each batch of pooled sera.

EXPERIMENTAL RESULTS

The effect of monoinfection with M. laidlawii on the immune response of the CC57W mice was tested on the 5th and 7th days after immunization with sheep's erythrocytes. No significant differences were found between the titers of humoral antibodies against sheep's erythrocytes at these two times, and the immune response of the (C57BL/6 × A/He) F_1 mice was accordingly studied on the 7th day only. The results of these tests are given in Table 1.

As Table 1 shows, the observed decrease in titer of hemolysins and hemagglutinating antibodies in the sera of some mice additionally infected with M. laidlawii was inconstant. The titer of hemolysins and hemagglutinins as a rule was somewhat lower in the sera of mice with mixed infection than in the sera of the control groups of animals, which were either not infected or infected with Rauscher virus alone.

Consequently, simultaneous infection of mice with M. laidlawii and Rauscher virus had only a very slight effect on the formation of humoral antibodies against sheep's erythrocytes.

It can be concluded from these results that M. laidlawii has no appreciable immunodepressive effect on the formation of humoral antibodies against sheep's erythrocytes and, consequently, its activating action on mixed mycoplasma and virus infection of mice resistant to Rauscher virus can hardly be explained by suppression of the natural resistance of these animals to this virus.

The mechanisms of the activating effect of M. laidlawii on mixed infection with Rauscher virus have not yet been explained.

LITERATURE CITED

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