

ACTIVITY OF
BOTTROMYCIN AGAINST
MYCOPLASMA GALLISEPTICUM

Sir :

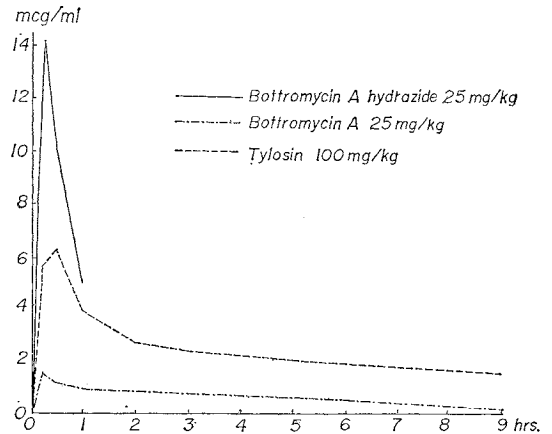
Bottromycin, peptide antibiotics produced by a *Streptomyces*, was observed to inhibit growth of *Mycoplasma mycoides* var. *mycoides*^{1,2)}. The study was extended to *Mycoplasma gallisepticum*. It was found to be significantly active both *in vitro* and *in vivo* against this organism.

The minimal growth inhibitory concentration of bottromycin A was in the range of 0.001~0.01 $\mu\text{g/ml}$, and that of bottromycin A hydrazide 0.1 $\mu\text{g/ml}$ in HOFSTAD medium.

Bottromycin A seemed to be more active than macrolide antibiotics: *i. e.* erythromycin, spiramycin and tylosin. Mikamycins A and B exhibited a synergistic activity. The results are presented in Table 1.

The chickens were infected with *Mycoplasma gallisepticum* S-6 by intratracheal inoculation. The administration of antibiotics began 2 days after the infection. *M.*

Fig. 1. Blood levels of bottromycin A, its hydrazide, and tylosin after the intramuscular administration in chickens



gallisepticum was isolated from trachea and infraorbital sinus of the infected birds, 2 days after termination of treatment. As summarized in Table 2, bottromycin A hydrazide exhibited a significant activity against the infection. Intramuscular injection showed a better effect than oral administration. The curative effects parallel the blood

Table 1. *In vitro* antimycoplasma activity of antibiotics

	<i>M. gallisepticum</i>							
	C30AS	21TTC	TexC ₆	396S	KP-3	S-6	SiP-1	KP-13
Bottromycin A	0.001	0.001	0.01	0.01	0.01	0.001	0.001	0.01
Bottromycin A hydrazide	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bottromycin B	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.1
Bottromycin C	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mikamycin A	10	1	1	1	1	10	1	1
Mikamycin B	100	100	100	100	100	100	100	100
Mikamycin A+B	1	0.1	1	0.1	0.1	1	0.1	0.1
Erythromycin	0.01	0.1	0.1	0.01	0.1	0.01	0.01	0.1
Spiramycin	0.01	0.01	0.1	0.01	0.01	0.01	0.01	0.01
Tylosin	0.01	0.01	0.1	0.01	0.01	0.01	0.01	0.01

The figures represent the minimal growth-inhibitory concentration ($\mu\text{g/ml}$).

Table 2. The chicken protection test against the infection of *Mycoplasma gallisepticum*

Antibiotics	Route of administration	Period of treatment	Isolation of <i>M. gallisepticum</i>	
			Trachea	Infraorbital sinus
Tylosin 50 mg/kg	oral	5 days	3/8	0/8
Bottromycin A hydrazide 50 mg/kg	oral	5 days	7/8	0/8
" 25 mg/kg	intramuscular	2 days	3/8	1/8
No antibiotic			8/8	5/8

levels of the antibiotics. The blood level after intramuscular injection of the aqueous solution in chickens is illustrated in Fig. 1.

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References

- 1) TANAKA, N.; T. NISHIMURA, S. NAKAMURA & H. UMEZAWA: Biological studies on bottromycin A and its hydrazide. *J. Antibiotics, Ser. A* 19: 149~154, 1966
- 2) OMURA, S.; Y. LIN, T. YAJIMA, S. NAKAMURA, N. TANAKA, H. UMEZAWA, S. YOKOYAMA, Y. HOMMA & M. HAMADA: Screening of antimycoplasm antibiotics. *J. Antibiotics, Ser. A* 20: 241~245, 1967