bitch's colostrum. It was also demonstrated that during the first days of suckling, the plasma cholinesterase of puppies increases[1], but this is not the case for the plasma cholinesterase of piglets[5]. This species difference, as well as the functional role of colostrum (and milk) cholinesterase, are still unsolved problems.

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Zusammenfassung

Es wird gezeigt, dass die Cholinesterasen im Blutplasma und Colostrum von Hündinnen identisch sind, und dass Cholinesterase die einzige im Colostrum vorhandene Esterase dieser Spezies ist.

Rifomycin IX[1]
Two New Antibiotics of Rifomycin Family: Rifomycin S and Rifomycin SV
Preliminary Report

It has been previously reported[2,3] that the antibacterial activity of aqueous solutions of rifomycin B increases with aging when the samples are exposed to air at room temperature. This property of rifomycin B is shown also by rifomycin O, a product which can be obtained by oxidation of rifomycin B and can be reduced again into rifomycin B[4].

The products found in activated solutions of both rifomycin B and rifomycin O appear to be the same substance[4].

Preliminary data are reported here concerning some properties of this activation product which was named by us rifomycin S. Rifomycin S cristallizes from methanol as yellow-orange crystals, m. p. 179–181°C (dec.). $[\alpha]_D^{20} = +476°C$ ($c = 0.1$, methanol). Rifomycin S has a weakly acidic nature (pH $1/2 = 7.2$; equivalent weight 685); its sodium salt is violet. Rifomycin S in buffer phosphate solution pH 7.3 shows absorption maxima at 317 mμ ($E_{1\,cm}^{1\%} = 426$) and at 525 mμ ($E_{1\,cm}^{1\%} = 62$).

Analysis: C 63.34; H 6.79; N 2.18; O 27.80; OCH_3 4.50; $COCH_3$ 6.10. Calc. for $C_{37}H_{47}NO_{12}$ (m.w. 697.75) [proposed]: C 63.68; H 6.79; N 2.01; O 27.51; 1 OCH_3 4.45; 1 $COCH_3$ 6.16.

Rifomycin S can be reduced by ascorbic acid into another antimicrobial substance, rifomycin SV. Rifomycin SV is a yellow-orange crystalline substance, decomposes at 140°C and does not melt until 300°C. $[\alpha]_D^{20} = -4°$ ($c = 1.0$, methanol). Rifomycin SV has an acidic nature (pH $1/2 = 2.7$; equivalent weight 685); its sodium salt is orange-red. Rifomycin SV in buffer phosphate solution pH 7.3 shows absorption maxima at 223 mμ ($E_{1\,cm}^{1\%} = 565$), 314 mμ ($E_{1\,cm}^{1\%} = 309$) and 445 mμ ($E_{1\,cm}^{1\%} = 188$).

Rifomycin SV can be transformed again, by oxidation, into rifomycin S. Analysis: C 62.85; H 7.15; N 2.08; O 28.01; OCH_3 4.40; $COCH_3$ 6.15. Calc. for $C_{37}H_{49}NO_{12}$ (m. w. 699.77) [proposed]: C 63.50; H 7.06; N 2.00; O 27.44; 1 OCH_3 4.43; 1 $COCH_3$ 6.15.

Both rifomycin S and rifomycin SV show high activity against Gram-positive bacteria and mycobacteria. In the Table I, the minimal inhibitory concentrations of the two antibiotics against a limited number of strains is reported.

While rifomycin S and rifomycin SV show practically identical antibacterial spectra, they have different acute toxicities. The LD_{50} values in mice by different administration routes are reported in Table II. Mice infected with lethal doses of virulent strains of *Streptococcus haemolyticus*, *Diplococcus pneumoniae*, or *Staphylococcus aureus* are protected by subcutaneous or oral administration of rifomycin SV.

Tab. I. Antibacterial activity of rifomycin S and rifomycin SV

Microorganism	Minimal inhibitory concentration γ/ml	
	Rifomycin S	Rifomycin SV
Micrococcus aureus	0.005	0.005
Streptococcus faecalis	0.09	0.05
Streptococcus haemolyticus	0.0025	0.0025
Bacillus subtilis	0.075	0.075
Proteus vulgaris	25	25
Escherichia coli	12	25
Pseudomonas aeruginosa	25	50
Klebsiella pneumoniae	25	25
Mycobacterium tuberculosis H 37 Rv	0.05	0.05
Candida albicans	> 100	> 100

Tab. II. Acute toxicity of rifomycin S and rifomycin SV in mice

	Administration route	LD_{50} (mg/kg) values and confidence limits ($p = 0.05$)
Rifomycin S	i. v.	122 (108–138)
	i. p.	258 (243–273)
	os	>3000
Rifomycin SV	i. v.	550 (482–627)
	i. p.	625 (579–675)
	os	2120 (1876–2395)

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Riassunto

Da soluzioni di rifomicina B e rifomicina O, che presentano il caratteristico comportamento di un incremento del titolo microbiologico con il tempo, è stato isolato un nuovo antibiotico chiamato rifomicina S. La rifomicina S, per blanda riduzione con acido ascorbico, viene trasformata in rifomicina SV.

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[4] P. SENSI, R. BALLOTTA, and A. M. GRECO, Rifomycin. V, Farmaco Ed. Sci. (Pavia) *15*, 228 (1960).