

IN VITRO SENSITIVITIES TO ANTIBIOTICS OF CERTAIN STRAINS OF MYCOPLASMA ISOLATED IN THE SUDAN

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Introduction

There has been an increase in production and wide use of antibiotics against microbial infection in animals. Elaborate research has been conducted by workers in U.S.A., Britain and Canada (Audrey G. Newnham and Chu 1965). In these studies preference was given to the *in vitro* action of the drugs on PPLO (Truscott, Onoviran, Ruhnke, Fish and Barker 1975).

In the Sudan some antibiotics were used for treatment of diseases due to mycoplasmas (El Nasri 1964). Our interest in this study was to find out the effect of some antibiotics on different strains of mycoplasmas isolated from domestic animals in the Sudan. We also attempted to study the possible significance of newly produced broad spectrum penicillins which could conceivably be used as substitutes for conventional antibacterial inhibitors.

The latter are routinely added to media when attempting to isolate mycoplasmas from tissue.

Materials and Methods

Materials :—

The antibiotics used were :—

1. Streptomycin sulphate.
2. Terramycin: Which is an oxytetracycline produced by Pfizer 50 mg/ml of oxytetracycline hydrochloride.
3. Pentrexyl (Ampicillin).
4. Oxytetracycline (TAD) : 1 ml containing 50 mg/ml oxytetracycline hydrochloride.

The strains and their origins:

1. Strain 186: is a *Mycoplasma gallinarum* isolated from a pneumonic lung of sheep (A control animal, Pathology Dept. Sudan).
2. Strain KVCl: *Mycoplasma arginini* isolated from a goat with acute CCPP (Khartoum Vet. Clinic—Sudan).

3. *Mycoplasma mycoides* subsp. *mycoides* (UG1) isolated from a case of CBPP (Um Gar Island, White Nile Province, Sudan).
4. *Mycoplasma mycoides* subsp. *capri*: The classical agent of CCPP (From Dr. P. Perreau Maisons-Alfort, France).
5. *A. laidlawii* (Strain HRV "AMRV-c. 1453-F AO/WHO"): Isolated from a healthy chicken in the Sudan.

Media :

Mycoplasma broth and agar (Oxoid No. CM 403) were used throughout this work.

Methods

4 drops of three days old culture of the above mentioned strains were inoculated in media with falling concentrations of 1000, 200, 40, 8, 1.6, 0.32, 0.060 ug/ml (Audrey G. Newnham and Chu 1965) in the case of water soluble antibiotics (Streptomycin and Ampicillin). As for injectable oxytetracyclines (Terramycin Pfizer and Oxytetracycline TAD) the concentrations were as follows: 10, 1.0, 0.1, 0.01 mg/ml.

Cultures were then incubated for three days at 37°C. Tubes were examined regularly for uniform opalescence. The tubes directly above and under the minimum inhibiting concentration "MIC" were cultured in mycoplasma agar to check for viability of the organisms. Cultures were also examined under the dark field microscope.

In solid media :—

Mycoplasma agar was used in this experiment. Using the running drop technique, we put freshly prepared antibiotic discs on the streak. We then incubated the plates at 37°C after putting them in humid plastic containers or polythene bags which also secure a humid environment. After three days we started reading the results. Zones were measured in mm.

Results

Oxytetracyclines were found to be the most effective drugs against the strains in question. Streptomycin had a lesser effect but ampicillin had no action at all.

Determination of the minimum inhibiting concentration "MIC" and the zones of inhibition (Table I and II) are recorded.

Table I.

The "MIC" of the antibiotics in this study on different Strains of mycoplasma isolated in the Sudan.

Origin of the strains	Strains	Ampicillin	Terramycin	Streptomycin	Oxytetracycline
M.gallinarum isolated from pneumonic lung (Sheep)	186	5000	100	3000	100
M. arginini isolated from goat with acute CCPP	KVC1	5000	10	3000	10
A. laidlawi isolated from a chicken in the Sudan	HRV-AMRC-C. 1453	5000	100	8	10
M. mycoides subsp. capri	PG3	5000	100	40	100
M. mycoides subsp. mycoides isolated in the Sudan	UG1	5000	10	N.D.	10

1. All concentration were measured in ug/ml.

2. N.D. Not done.

Table II.

Zones of inhibition of some mycoplasma strains isolated in the Sudan on solid media.

Strains	Streptomycin		Ampicillin		Terramycin		Oxytetracycline	
	Side I	Side II	side I	side II	side I	side II	side I	side II
186	11	7	-ve	-ve	9	4	9	N.D.
KVC1	4	2	-ve	-ve	17	16	18	N.D.
UG1	7	7	-ve	-ve	7	7	7	N.D.
M. capri	6	5	-ve	-ve	7	6	7	N.D.
HRV	7	N.D.	-ve	-ve	8	8	7	N.D.

The results were written in mm.

N.D. Not Done

Summary

The rising significance of antibiotics used in veterinary practice provided stimulus for this study. The authors studied the action of some drugs on mycoplasmas isolated in the Sudan. The antibiotics used were Streptomycin, Oxytetracyclines and Ampicillin.

Oxytetracyclines were found to be the most effective against these strains. Streptomycin had a lesser effect but Ampicillin had no inhibitory effect on any of the mycoplasmas tested. Its importance to replace the conventional antibacterial inhibitors used in primary isolation of mycoplasma is discussed. Tests were done *in vitro* on both liquid and solid media.

Acknowledgement

The authors are grateful to the Director of veterinary Research Administration for encouragement. The assistance of the technical staff of the Mycoplasma Dept. is highly appreciated.

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