Evaluation of "Valsyn-Gel" in The Treatment of Chronic, Subclinical Mastitis[1]

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INTRODUCTION

Infectious bovine mastitis, a very common disease of the mammary gland, continues to be one of the principal causes of economic losses in dairy operations. The prospect is that, if the disease is not controlled in its present state by a sound program of disease prevention and the use of adequate drugs, these losses will continue to soar.

There is a close relationship of the disease to the normal production of milk in a herd, to the fitness of the milk for human consumption, and to the general health condition of the producing cow. Because of this interrelationship it is necessary that adequate testing of therapeutic agents that are recommended for or claimed to be the cure of the infection should be carried out so that their proper use in the control of the infection among the milk-producing establishments of the Island and elsewhere can be evaluated.

The evaluation of agents for mastitis control has been very limited in the Island. Orlandi and Rivera-Anaya, as part of a study on the role of sanitary management practices in the prevention of mastitis in the Station herd, used chemotherapeutic agents as a secondary objective of their study, and found an efficiency of 82.0 percent with the material they used. Likewise, in recent unpublished progress reports, Berrocal and Rivera-Anaya found that the efficacy of different agents used varied from 72 to 91 percent. Further search of the literature revealed no other reports on this subject in Puerto Rico.

The objective of the present observations was the testing of a new antimicrobial preparation, Valsyn-Gel,[3] containing furaltadone as its active principle, in comparison to two popular commercial antimastitic preparations in the control of chronic, subclinical mastitis.

PROCEDURE

The cows used in these observations belonged to the dairy herd of the Agricultural Experiment Station of the University of Puerto Rico at Río Piedras.

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[3] Valsyn-Gel was supplied by the Norwich Pharmacal Co., Norwich, N.Y.

Quarter-milk samples showing streptococci or staphylococci were obtained by chance when routine examinations of all milking cows were made. Later on, samples were drawn only from quarters reported to have clots upon routine strip-cup checkups.

Quarter-milk samples were aseptically collected in sterile vials and examined microscopically after routine bacteriological laboratory procedures. Quarters with streptococci and/or staphylococci, alone or with leucocytes, were considered to suffer from chronic, subclinical mastitis (catarrhal phase), and were included in the treatment-schedules and observations.

The 213 quarters observed were randomly assigned to treatment schedules as follows:

1. Fifty-three quarters were treated with a commercial preparation containing oxytetracycline hydrochloride. Each quarter was infused with a standard commercial tube-dose; a second dose was given 24 hours afterwards.

2. Thirty-seven quarters were treated with a commercial preparation containing a combination of chlortetracycline hydrochloride, neomycin sulfate, and dihydrostreptomycin sulfate. The dose was repeated after 24 hours.

Besides these, 22 additional quarters were treated, following the manufacturers' indications, with a single tube-dose.

3. Sixty-three quarters were treated with Valsyn-Gel, and the dose was repeated 24 hours afterwards.

An additional 38 quarters were treated with 1 dose of Valsyn-Gel immediately after milking for 3 consecutive milkings. This is the treatment schedule suggested by the manufacturer.

Milk samples obtained from each quarter on the 10th, 19th, 20th, and 21st posttreatment days were examined microscopically in the laboratory to ascertain the bacteriological status of individual quarters.

A quarter was considered 'positive' if the organism seen in the pretreatment sample was observed in the samples from 2 consecutive posttreatment days.

RESULTS AND OBSERVATIONS

Sixty-five of the 213 quarters observed were right-front ones, while 70 were left-front, 42 were right-hind, and 36 were left-hind (table 1).

All statistical calculations were done on the "chi-square" (X^2) by the "2×2" method.

OXYTETRACYCLINE TREATMENT

Ten days posttreatment, 47 out of 48 quarters treated twice at a 24-hour interval with oxytetracycline hydrochloride ointment were negative

for *Streptococcus agalactiae*, the micro-organism found in the pretreatment samples, for a 97.92-percent efficacy (table 2). Nineteen, twenty, and twenty-one days posttreatment the numbers of negative quarters were 40, 39, and 39, respectively. This represents a treatment efficacy of 83.33, 81.25, and 81.25 percent, respectively.

Five quarters showed *Staphylococcus albus* in the pretreatment samples. All five quarters were negative for that organism 10, 19, and 20 days posttreatment, or a 100-percent treatment efficacy, while four were negative 21 days posttreatment, or 80-percent treatment efficacy.

TABLE 1.—*Distribution of mastitic quarters, by treatment, Agricultural Experiment Station dairy herd, Puerto Rico, 1961–62*

Treatment and dose interval	Data for quarters indicated				Total
	Front		Hind		
	Right	Left	Right	Left	
Oxytetracycline ointment:					
1 dose repeated after 24 hours	17	16	9	11	53
Chlortetracycline-neomycin-dihydrostreptomycin ointment:					
1 dose repeated after 24 hours	13	12	4	8	37
1 dose only	3	7	6	6	22
Valsyn-Gel:					
1 dose repeated after 24 hours	19	20	16	8	63
1 dose after 3 consecutive milkings	13	15	7	3	38
Total	65	70	42	36	213

CHLORTETRACYCLINE TREATMENT

When 2 doses of chlortetracycline were given at a 24-hour interval, all of the 36 quarters shown to have *Strep. agalactiae* in their pretreatment samples were negative at 10 days posttreatment, or 100-percent treatment efficacy. Nineteen, twenty, and twenty-one days posttreatment, the number of negative quarters was 33, 31, and 32 respectively, which represents a treatment efficacy of 91.67, 86.11, and 88.89 percent, respectively.

Only one quarter with *Staph. albus* was treated. Observations at all the posttreatment intervals mentioned were negative for *Staph.* in this quarter.

Twenty-two additional quarters with *Strep. agalactiae* were treated following the manufacturers' recommendations of using only a single dose per affected quarter. Ten days posttreatment all 22 quarters were nega-

TABLE 2.—*Effectiveness of treatments on 213 mastitic quarters, Agricultural Experiment Station dairy herd, Puerto Rico, 1961–62*

Treatment and dose interval	Pretreatment diagnosis	Negative quarters: Posttreatment observations at —							
		10 days		19 days		20 days		21 days	
		Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Oxytetracycline ointment; 1 dose repeated after 24 hours	*Streptococcus agalactiae* 48[1]	47	97.92	40[2]	83.33	39[2]	81.25	39[2]	81.25
	Staphylococcus albus 5	5	100.00	5	100.00	5	100.00	4	80.00
Chlortetracycline-Neomycin-Dihydrostreptomycin ointment; 1 dose repeated after 24 hours	*Strep. agalactiae* 36[3]	36	100.00	33	91.67	31	86.11	32	88.89
	Staph. albus 1	1	100.00	1	100.00	1	100.00	1	100.00
	Strep. agalactiae 22[4]	22	100.00	21	95.45	21	95.45	21	95.45
Valsyn-Gel; 1 dose repeated after 24 hours	*Strep. agalactiae* 59[5]	49	83.05	34[6]	57.63	33[7]	55.93	21[7]	35.59
	Staph. albus 4	4	100.00	4	100.00	4[8]	100.00	4[8]	100.00
1 dose Valsyn-Gel, after 3 consecutive milkings	*Strep. agalactiae* 38	34[10]	89.47	30[11]	78.95	30[12]	78.95	30[12]	78.95

[1] 10 quarters had clots.
[2] 1 quarter had clots.
[3] 6 quarters had clots.
[4] 3 quarters had clots.
[5] 12 quarters had clots.
[6] 1 quarter had clots.
[7] 4 negative quarters were dried-off after the 10-day post-treatment sample.
[8] 2 quarters, negative for *staphylococci* had *streptococci* on the 20th and 21st post-treatments days.
[9] 19 quarters had clots.
[10] 1 quarter had clots.
[11] 2 quarter had clots.
[12] 3 quarter had clots.

tive for *Streptococcus*, representing 100-percent treatment efficacy, while 21 quarters were, likewise, negative through the 19th, 20th, and 21st days posttreatment period, reflecting a treatment efficacy of 95.45 percent.

FURALTADONE TREATMENT (VALSYN-GEL)

The treatment schedule of 1 dose of Valsyn-Gel repeated at 24-hour interval showed 49 quarters negative to *Strep. agalactiae*, out of the 59 having the organism in the pretreatment samples, 10 days after treatment. This represents 83.05-percent treatment efficacy.

Efficacy dropped sharply from that level to 34 negative quarters at 19-day posttreatment (57.63 percent), to 33 negative quarters at 20-day posttreatment (55.93 percent), and to only 21 negative quarters at 21-day posttreatment (35.95 percent). Four quarters were "dried-off" after a negative observation at 10-day posttreatment precluding sampling at other posttreatment dates.

The four quarters showing *Staph. albus* in pretreatment samples resulted negative for the organism at 10-, 19-, 20- and 21-day posttreatment observations. However, two of these quarters showed *Strep. agalactiae* in their 20- and 21-day posttreatment samples.

The treatment schedule suggested by the manufacturer was tried on 38 additional quarters with *Strep. agalactiae* using 1 dose after each of 3 consecutive milkings. Thirty-four quarters were negative for streptococci 10 days posttreatment, reflecting 89.47-percent treatment efficacy. Thirty quarters remained negative through the 19th, 20th, and 21st day posttreatment period, showing a treatment efficacy of 78.95 percent.

There was no significant difference in the efficacy of Valsyn-Gel when using a 2- or a 3-dose schedule, at the 10-day posttreatment observation. However, the 3-dose schedule was significant over the 2-dose one at the 5-percent level on the 19th and 20th days posttreatment, and at the 1-percent level on the 21st posttreatment-day observation.

The oxytetracycline ointment treatment was significant in effectiveness over the Valsyn-Gel at the 5-percent level in all of the posttreatment observations. The chlortetracycline-ointment treatment was significant over the Valsyn-Gel at the 1-percent level in all of the posttreatment observations. There was no significant difference between the oxytetracycline and chlortetracycline ointments in any of the posttreatment observations.

The metal tube of the oxytetracycline preparation was easier to squeeze and roll up than that of the chlortetracycline preparation, as the latter was of a thicker consistency. The operator needed both hands to squeeze and roll up the metal tube used for both preparations.

Valsyn-Gel is of a more liquid consistency than the other two anti-

mastitic preparations considered, which permitted the squeezing and collapsing of the accordion-type, plastic container in a very easy, one-hand operation.

SUMMARY

A study was conducted to evaluate the therapeutic efficiency of "Valsyn-Gel," a furaltadone-containing preparation, in the control of mastitic infections. Two hundred and thirteen quarters were randomly treated with the preparations used in the evaluation study. Treatment-efficiency percentages for Valsyn-Gel were 89.5, 78.9, 78.9, and 78.9 for 10, 19, 20, and 21 days posttreatment. Percentages for two other preparations, oxytetracycline and chlortetracycline neomycin, varied from 100 for the 10-day posttreatment check to 81.3 for the 21-day posttreatment observation.

RESUMEN

Se llevó a cabo un estudio para evaluar la eficiencia terapéutica del Valsyn-Gel, preparación que contiene furaltadone y que se usa para combatir la mastitis. Se trataron doscientos trece (213) cuartos, agrupados al azar, con las tres preparaciones bajo estudio. La eficiencia terapéutica del Valsyn-Gel después de los 10, 19, 20, 21 días del tratamiento fue de 89.5, 78.9, 78.9, y 78.9 por ciento, respectivamente. El porcentaje de eficiencia de los otros dos compuestos varió desde 100 por ciento, diez días después del tratamiento, hasta 81.3 por ciento 21 días después.