

Brucellosis in Dairy Cattle

Whey test accurately detects infected cows and distinguishes between reactions to late vaccination and virulent infection

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Vaccinating calves against brucellosis reduces the incidence of the disease but can not be expected to eradicate infection.

The chief effect of the vaccine is to prevent abortion. It will not prevent an exposed cow from becoming infected and a chronic carrier of the *Brucella* organism. Testing in California has shown that many vaccinated animals are actually carriers, though they show no evidence of the disease other than a positive test. Therefore detection of carrier ani-

mals is a necessary adjunct to a vaccination program.

Two official tests—one for detecting an infected herd and one other for detecting infected individuals—are recognized.

The brucellosis ring test—BRT—is conducted on a composite sample from the milk of not more than 150 cows to detect an infected herd. Two drops of a blue stained antigen are added to the composite sample, which need not be more than 2 cc—cubic centimeters—and the mixture is incubated not more than one hour at 98.6°F. The stained antigen will remain uniformly distributed throughout the sample if there are no

are branded and slaughtered, and the herd is retested by the ring test within 60 days. When a herd passes two consecutive negative ring tests—not less than six months apart—it is eligible for certification under the area plan.

Obtaining blood samples from dairy cows is a major and costly operation and—in many instances—it is impossible. However, the whey test can be safely substituted for the blood test in an area certification program.

The whey test—like the BRT—is based on the presence of antibodies in milk. Two drops of liquid rennet are added to a composite sample of milk—about 10 cc obtained at the time of milking—and the mixture is incubated an hour at 98.6°F. During that hour the milk will coagulate and the whey separate. The whey is used for testing with stained antigen as in the BRT. The whey test will differentiate reactions caused only by vaccination from reactions caused by virulent infection. A whey reaction caused by vaccination will not persist for more than 90 days, whereas a blood reaction caused by late calving or adult vaccination will persist indefinitely, fluctuating between suspicious and positive. Blood testing in herds where late or adult vaccination has been practiced will result in the branding for slaughter of animals that are not infected.

In a survey conducted in 45 representative herds in northern California, the herds were ring tested, and individual animals immediately whey tested. A second ring test—following the whey test—was conducted on suspicious herds except that the milk from whey-reacting animals was not included in the retest. The results of the tests are shown in the table. With few exceptions, BRT-suspicious herds became negative when the whey reactors were removed.

The results of the studies give further evidence that the whey test can be used to detect carrier animals in BRT-suspicious herds, and that it can be substituted for the blood test in lactating cows in an area program where negative ring tests constitute the final evidence for certification.

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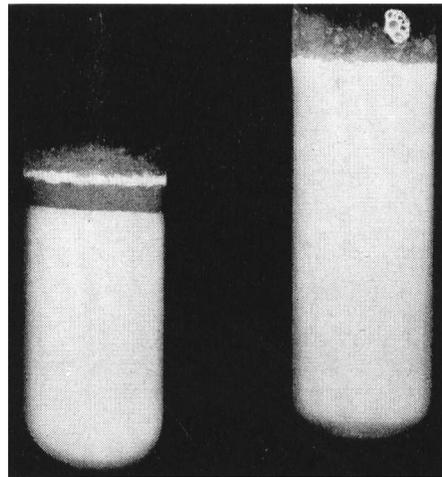
The above progress report is based on Research Project No. 1029.

The Effect on Ring Test Results of the Removal of Whey Reactors

Herd	Whey test No. of animals			BRT	
	Neg.	Susp.	Pos.	Total herd	Whey Neg. only
1	85	0	1	Susp.	Neg.
2	53	1	0	Neg.	
3	45	1	0	Neg.	
4	41	1	0	Neg.	
5	79	0	0	Neg.	
6	37	0	0	Neg.	
7	60	0	2	Susp.	Neg.
8	32	1	1	Susp.	Neg.
9	79	0	0	Neg.	
10	39	1	1	Susp.	Neg.
11	64	0	6	Susp.	Neg.
12	62	0	0	Neg.	
13	76	3	1	Neg.	
14	123	1	1	Susp.	Neg.
15	78	2	1	Susp.	Neg.
16	63	0	0	Neg.	
17	31	0	4	Susp.	Neg.
18	207	1	7	Susp.	Neg.
19	241	0	11	Susp.	Neg.
20	91	0	0	Neg.	
21	114	0	0	Neg.	
22	52	0	0	Neg.	
23	78	1	4	Susp.	Neg.
24	54	1	6	Susp.	Susp.
25	69	0	2	Neg.	Neg.
26	91	0	0	Neg.	
27	187	2	1	Susp.	Neg.
28	44	0	11	Susp.	Neg.
29	55	0	6	Susp.	Neg.
30	76	1	2	Susp.	Neg.
31	176	3	5	Susp.	Neg.
32	255	4	13	Susp.	Neg.
33	57	2	0	Neg.	
34	85	1	0	Neg.	
35	100	3	2	Susp.	Neg.
36	189	0	1	Susp.	Neg.
37	72	0	0	Neg.	
38	180	1	6	Susp.	Susp.
39	74	0	1	Susp.	Neg.
40	176	0	4	Susp.	Neg.
41	77	1	7	Susp.	Susp.
42	109	1	1	Susp.	Neg.
43	99	1	6	Susp.	Neg.
44	65	1	1	Susp.	Neg.
45	80	0	2	Neg.	

BRT—Brucellosis test. Neg.—Negative. Susp.—Suspicious. Pos.—Positive. Whey reactions at 1 and 2—Suspicious. Reactions at 3 and 4—Positive.

Brucellosis ring test using stained antigen for herd testing. Left—suspicious; right—negative.



infected animals in the group. However, if there is an infected cow represented in the milk sample, the stained antigen will accumulate in the cream layer, leaving the remainder of the milk almost normal in color. The stained antigen is a critically standardized suspension of *Brucella* organisms prepared for use in laboratories approved for such testing. This extremely sensitive test is widely used in area eradication programs for screening out negative herds, thereby eliminating the other official test—the blood test—on individual cows.

In area eradication programs leading to modified brucellosis-free status, the BRT is used to test the herd and the blood test is used on individual cows in a BRT-suspicious herd. Infected cows