

Evaluation of the Early Conception Factor (ECF™) Test in Cows 3-7 Days Post-Breeding

C. S. Adams, DVM, MPVM

Department of Animal and Veterinary Sciences, Clemson University, Clemson, SC

P. W. Jardon, DVM, MPVM

Veterinary Medical Teaching and Research Center, University of California, Davis School of Veterinary Medicine
Tulare, CA

Introduction

Accurate assessment of the pregnancy status of cattle 3-7 days following conception, in conjunction with prostaglandin administration, could significantly decrease the average days open. The Early Conception Factor (ECF™) test kit (Concepto Diagnostics, Knoxville, Tenn) reportedly detects the open status of a cow 3-15 days post-breeding through the detection of a protein designated Early Conception Factor in the serum of pregnant cows. A protein of this type has been discussed by Threlfall.¹ In order to determine the accuracy of the ECF™ test, sera from 150 dairy cows 3-7 days post-breeding were tested, using the ECF™ test kits. These cattle were then examined for pregnancy by rectal palpation by veterinarians 41-59 days post-breeding.

Materials and Methods

Over a 7-day period on a large California dairy, blood samples were collected from 150 cows which were artificially inseminated 3-7 days prior to collection. Following collection, the samples were centrifuged for 15 minutes and the serum was extracted. The samples were then refrigerated for 20 days, due to unavailability of test kits. Refrigeration of serum for this length of time does not alter the test results.² Each ECF™ test consisted of a pipet, a test cassette, humidity indicator, and wash solution. The humidity indicators were examined from each test and all were blue, indicating the test was undamaged. The ECF™ assay is a dip-stick assay, which incorporates monoclonal and polyclonal antibodies into nitrocellulose membranes to detect the presence of Early Conception Factor.³ All tests were performed and evaluated precisely according to the protocol outlined in the product insert.³ The result of each test was evaluated and recorded after 90 minutes. All 150 tests evaluated showed a conspicuous line in the control region of the test cassette, indicating the test was conducted prop-

erly and the result valid. At 41-59 days post-breeding, 133 of the cows were examined for pregnancy by rectal palpation by veterinarians. The remaining 17 cows were lost to follow up. The veterinarians engaged in pregnancy diagnosis were unaware of the ECF™ test results of the cattle being examined. The results of the rectal pregnancy exams were recorded and compared to results obtained earlier utilizing the ECF™ assay kits.

Results

The results are shown in Table 1. The sensitivity and specificity of the ECF™ test are .51 and .55 respectively. The predictive value of a positive test is 37%, and that for a negative test is 69%.

Table 1. ECF™ test results versus rectal palpation results

	Palpation result Pregnant	Palpation result Open	Total
ECF™ Positive (pregnant)	23	40	63
ECF™ Negative (open)	22	48	70
Total	45	88	133

Discussion

The results suggest that the ECF™ test is not an accurate indicator of the open status of cows when cows are tested 3-7 days post-breeding. Of the cows diagnosed pregnant by a veterinarian, 49% were diagnosed as not pregnant by the ECF™ test. Therefore, 49% of the rectally diagnosed pregnant cows were misdiagnosed as open by the ECF™ test. Reimers, et al⁴ found that only

9.2% of cows diagnosed as open via rectal palpation were actually pregnant at the time of palpation. Only 37% of the cows diagnosed pregnant via the ECF™ test were diagnosed pregnant by rectal palpation at 41-59 days post-breeding. This discrepancy may reflect death of the conceptus during the time period between the ECF™ test and rectal palpation, and/or inability of the ECF™ test to detect pregnancy. The results of this study indicate that the ECF™ test, when conducted at 3-7 days postbreeding, is less accurate than rectal palpation in determining the pregnancy status of cows.

References

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