J Clin Microbiol. 1995 May;33(5):1308-13.

PCR-based study of conserved and variable DNA sequences of Tritrichomonas foetus isolates from Saskatchewan, Canada.

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Abstract

The protozoan parasite Tritrichomonas foetus causes infertility and spontaneous abortion in cattle. In Saskatchewan, Canada, the culture prevalence of trichomonads was 65 of 1,048 (6%) among 1,048 bulls tested within a 1-year period ending in April 1994. Saskatchewan was previously thought to be free of the parasite. To confirm the culture results, possible T. foetus DNA presence was determined by the PCR. All of the 16 culture-positive isolates tested were PCR positive by a single-band test, but one PCR product was weak. DNA fingerprinting by both T17 PCR and randomly amplified polymorphic DNA PCR revealed genetic variation or polymorphism among the T. foetus isolates. T17 PCR also revealed conserved loci that distinguished these T. foetus isolates from Trichomonas vaginalis, from a variety of other protozoa, and from prokaryotes. TCO-1 PCR, a PCR test designed to sample DNA sequence homologous to the 5' flank of a highly conserved cell division control gene, detected genetic polymorphism at low stringency and a conserved, single locus at higher stringency. These findings suggested that T. foetus isolates exhibit both conserved genetic loci and polymorphic loci detectable by independent PCR methods. Both conserved and polymorphic genetic loci may prove useful for improved clinical diagnosis of T. foetus. The polymorphic loci detected by PCR suggested either a long history of infection or multiple lines of T. foetus infection in Saskatchewan. Polymorphic loci detected by PCR may provide data for epidemiologic studies of T. foetus.