Title: Detection of enterotoxigenic K99 (F5) and F41 from fecal sample of calves by molecular and SDS-PAGE

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Abstract: Background and objectives: Enterotoxigenic Esherichia coli (ETEC), rotavirus, Coronavirus, and Cryptosporidium are the four major pathogens associated with neonatal calf diarrhea. The importance of ETEC as a major cause of diarrhea was recognized in the late 60’s. Two virulence attributes that characterize ETEC are the colonization of the small intestine surface and the production of enterotoxins that induce a net secretion of electrolytes and water into the gut lumen. Virulence factors include heat-stable (ST) and heat-labile (LT) enterotoxins. The most commonly fimbriae are K99 (F5) and F41. In this study we investigated the prevalence of virulence factors associated with the pathogenicity of E.coli K99 (LT, STa, STb, F41) by PCR and compared different methods of protein pattern (Bead, Urea, Glass powder) by SDS- PAGE.

Material & methods: Escherichia coli strains of calf origin were isolated and purified. The virulence genes were detected by PCR and SDS-PAGE was done comparison the protein profile.

Results: Of 300 faecal samples, 120 E.coli strains were isolated and identified. Genotypes of 120 strains were verified by PCR. All of the strains of E.coli K99 were positive for F5, F41, STa but the E. strains were negative for LT. Electrophoretic protein patterns of isolates was found that each of bacterial contained over 20 polypeptide bands, the majority of protein bands were located in the gel between 50-90 KDa.

Conclusion: From the 300 samples, we found 200 ETEC and 120 of ETEC were K99 by the slide agglutination test. PCR detected Virulence factors of E. coli K99, F41 and STa. in the protein profiles of the isolates were ranging from 40 -100 KDa molecular weight. For the first time in Iran we compared protein patterns of strains by bead, urea and glass powder. The results of this study were for glass powder more considerable.

enterotoxigenic Esherichia coli, virulence factors, protein profile, PCR

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