ELECTROPHORETIC HETEROGENEITY OF THE LIPOPOLYSACCHARIDE OF PATHOGENIC AND COMMENSAL ESCHERICHIA COLI

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Bacterial endotoxin is mainly lipopolysaccharides (LPS) which consist of lipid A, core oligosaccharide and O- antigen polysaccharide. Polyacrylamide gel electrophoresis is the simplest method of examining the heterogeneity in O- antigen chain length. The present study was carried out to differentiate commensal and pathogenic *E. coli* in chicken by their electrophoretic heterogeneity.

LPS was extracted by rapid phenol micro method from 55 chicken *E. coli* isolates of which 28 were isolated from the cases of colisepticaemia, 11 from slaughtered birds (processing plants) with various liver lesions and 15 from faeces of healthy birds.

The morphological heterogeneity of LPS of those isolates was detected on 14% polyacrylamide gels omitting SDS from both stacking and separating gels. Molecular bands were visualized by silver staining.

Most of the faecal isolates (63.6%) obtained from healthy birds were rough and exhibited a rapidly moving low molecular weight band and lacked electrophoretic heterogeneity. This rough mutant only contains core oligosaccharide and lipid A. Extraction of LPS from five faecal isolates was not possible which may be due to poor water solubility of the rough mutant containing a low amount of polysaccharide.

The majority of clinical isolates were smooth (92%) with multiple dark bands of different molecular weights and bands being closely spaced. Smooth LPS profiles of clinical isolates too showed variation. All *E. coli* isolates obtained from processing plants were smooth and appeared as a 'ladder pattern' of regular spaced faint bands with a wide range of molecular weights.

Analysis of 55 *E. coli* isolates revealed at least 5 major LPS heterogeneities. Rough mutants were common in faecal isolates and most clinical isolates were smooth. Studying the microheterogeneity of smooth LPS may help in distinguishing them further.

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