

METHODOLOGICAL ASPECTS AND APPLICATIONS OF FLUORESCENT *IN SITU* HYBRIDIZATION TO IDENTIFY BACTERIA FROM THE GASTROINTESTINAL TRACT OF TURKEYS

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Summary. The microflora of avian gastrointestinal tract has received increased attention as the focus of efforts to improve animal nutrition and to minimize food-borne illness in humans. This microflora is subjected to variations according to diet, environment and treatments. Conventional methods for determining the flora composition rely on the cultivation of bacteria on anaerobic selective media. This approach is time-consuming because many bacteria are difficult to culture or are uncultivable. Molecular tools introduced in microbial ecology have made it possible to study the composition of intestinal flora in a culture-independent way. Our paper describes a methodological aspects and application of FISH method with rRNA-targeted fluorescent probes to identify bacteria from the gastrointestinal tract of turkey. This technique poses advantages compared with traditional culture-based methods as it does not require cultivation of the target organisms. FISH enables to address simultaneously various ecological issues: 1. to by-pass cultivation problems, 2. to identify and to accurately enumerate prokaryote sub-populations in natural systems by using sets of probes 3. to analyze their spatial distributions. Although FISH has been used widely in bacterial ecology, the method requires some adaptation to the type of samples analyzed. Applying the optimized FISH method for the analysis of turkey caecum, we were able to identify *Eubacterium rectale*, the genera *Enterobacteriaceae*, *Bacteroides*, *Bifidobacterium*, and *Lactobacillus-Enterococcus* groups.

Key words: bacteria, oligonucleotide probes, 16S rRNA, FISH, caecum, turkey.