

Dissemination of three coliphages in chicken's organism

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E.coli can cause severe respiratory and systemic infections in chickens, responsible for significant economic losses in the poultry industry. Phages are good candidates to treat bacterial infections as alternative to antibiotics. In order to predict the efficacy of phage therapy, it is important to know the phage(s) dissemination in the animal body. *In vivo* trials were conducted by infecting chickens with three lytic phages: F78E (*Myoviridae*), F258E (*Syphoviridae*) and F61E (*Myoviridae*). 10^6 , 10^7 and 10^8 pfu were administered in the drinking water, by spray and intramuscularly. Birds were euthanised after 3, 10 and 24h of phage challenge and pfu were measured from the supernatants of emulsified lungs and air sac membranes, liver, duodenum and spleen. The three routes of administration, oral, spray and intramuscular, were found to be effective in delivering the phages to the respiratory tract, which is an important target organ for *E. coli* infections. When administration was by spray all the 3 phages reached the respiratory tract 3h after challenge, despite the different phage amounts recovered. When the routes of administration were oral or spray, phages F258 and F61E were never found in the animal's duodenums, conversely phage F78E was found in their intestinal content. The presence of phage F78E in the duodenum was probably due to the existence of a commensally enteric host, sensitive to this phage. As this phage was also found in spleens and livers, it has probably crossed the intestinal mucosa. The results suggest that the presence of commensal host strains can increase the efficacy of phage therapy. It was possible to conclude that, to treat respiratory *E.coli* infections in poultry industry, spray and drinking water are promising administration ways.

Key words: *E.coli*; phage distribution; therapy

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