

The antibiotic ENROFLOXACIN incorporated in white cabbage: high up-take potential and inhibitory effect on *E. coli*

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Livestock manure and slurry used to fertilise agricultural fields are potentially a large source of antibiotic substances, when animals in production systems are treated with antibiotics. Uptake of antibiotics into vegetables from soil has experimentally been shown in different plant-soil systems. It is not known, if low concentrations of antibiotic substances contained in plant food can contribute to development of bacterial resistance in animals and humans. However, there is evidence that antibiotic concentrations below the minimum inhibitory concentration can select for antibiotic resistance in bacteria. Consequently, the role of vegetables as pool of antibiotic contaminants demands closer examination, such as aimed at in the research project RESET (ESBL and fluoroquinolone resistance in *Enterobacteriaceae*, www.reset-verbund.de).

White cabbage showed considerable uptake capacity for the fluoroquinolone enrofloxacin (ENR) and thus was used in the present work. Cabbage was cultivated using a hydroponic system in a plant growth chamber. The nutrient solution was spiked with ENR at five different concentrations. Spiking was done over six days, after which cabbage was harvested. ENR concentrations were determined in leaf tissues and xylem sap of cabbage adapting an established LC-MS/MS method. ENR increased in xylem sap and in leaves with increasing spiking concentration in nutrient solution. There was no clear limit of ENR uptake. Bacterial inhibition assays were performed with cabbage leaf discs, leaf extracts and xylem sap. Clear inhibition zones of *E. coli* growth were obtained, where increasing inhibition zones correlated with increased ENR concentration in leaf tissues and xylem sap. These results revealed that ENR, contained in cabbage tissues, is mobile and can still exert a concentration dependent growth inhibitory effect on microorganisms.