Quantification of bioavailable chlortetracycline in pig feces using a bacterial whole-cell biosensor

Bacterial whole-cell biosensors were used to measure the concentration of chlortetracycline (CTC) in the feces of pigs. In this study, the Escherichia coli biosensor used has a detection limit of 0.03 mg/kg CTC in pig feces. The tetracycline concentration was correlated with the appearance and maintenance of fecal coliform bacteria resistant to tetracycline. Initially, large quantities of water-extractable CTC were excreted from the pigs and measurable amounts were detected even at 30 days after treatment cessation. This led to a sharp rise in the number of tetracycline resistant coliform bacteria in the feces, to within the same order of magnitude as the total coliform count. The high level of tetracycline resistance was maintained in spite of the declining concentration of tetracycline. (C) 2002 Elsevier Science B.V. All rights reserved.