

Facile screening of enrofloxacin using microbial respiration and capillary tube indicators

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A facile method was developed for the detection of antibiotics in milk using microbial respiration and capillary tube indicators. A glass vial containing *E. coli* ATCC 11303 in LB was spiked with enrofloxacin and sealed with a screw cap supporting a silicon septum. A capillary tube with a drop of ink was inserted through the septum, and the ink level change was measured. The growth of *E. coli* produced CO₂ gas, which increased the pressure inside the vial and raised the ink level in the capillary tube. The capillary tube translated the small change in the gas volume inside the glass vial to a large change in the ink level inside the capillary tube. The increase in the ink level was inversely proportional to the concentration of enrofloxacin, which suppressed the growth of *E. coli*. The detection limit of enrofloxacin was found to be 10 ng/mL using the naked eye, after the microbial culture had been permitted to grow over 2 h.