

## A PRELIMINARY STUDY TO DETECT ANTIBIOTIC RESIDUES IN FRESH MILK

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Due to the wide usage of antibiotics in the treatment and prevention of diseases in dairy cows, there is a likelihood of antibiotic residues occurring in milk. Such residues can cause several adverse effects in humans including hypersensitivity reactions. These residues may also interfere with bacterial starter cultures used for preparing of curd, yoghurt and cheese.

This study was designed to screen milk for the presence of antibiotic residues. The study was carried out in 74 dairy cows reared in certain selected areas of the Kandy district. After taking the history of each cow, milk samples from each animal were obtained into sterile bottles at the time of milking. Before performing the screening test, the samples were heated at 100 °C for 5 minutes to destroy natural inhibitory substances in raw milk. For negative control, 2 ml of 10 % skimmed milk heated at 110 °C for 10 minutes was used. The positive control was a 2 ml milk sample containing 0.006 µg/ml of benzathene benzyl penicillin. A prepared test culture of 0.2 ml of *Streptococcus thermophilus* strain T.J. containing yeast-extract and bromocresol purple (as pH indicator), were added to each 2 ml of milk sample and placed in a water bath at 45 °C ± 0.5 for 2.5 hours. Bromocresol purple is purple at the beginning and turns yellow due to acidification during the growth of the bacteria. Retention of the original purple colour indicates that the bacterial growth has been inhibited and such samples were considered as positive. The samples that gave a yellow colour were considered as negative.

Out of the 74 samples tested, 7 samples (9.5 %) were found to be positive and 63 samples (85.1 %) were negative for chemical inhibitory substance. Four samples (5.4%) gave intermediate colours indicating doubtful results. The positive results could be due to the presence of antibiotic residues or other inhibitory chemicals in raw milk.

Serial dilutions of antibiotics prepared in skimmed milk were used to detect the level of sensitivity of the test. Penicillin and oxytetracycline gave the colour change at >0.005 µg/ml. Cloxacillin gave the colour change at 0.5 µg/ml where as gentamycin changed the colour at 0.5µg/ml concentrations. Chloramphenicol gave the colour change at 100 µg/ml. Therefore the test was found to be highly sensitive to penicillin and oxytetracycline antibiotics, whereas Chloramphenicol was found to be the least sensitive antibiotic for this test.

The results revealed that the fresh milk is not totally devoid of inhibitory substances and further studies are necessary to specify the chemical and to quantitatively determine its concentration.