Abstract

Dairy farms located in different localities of Khartoum State were investigated for Presence of calf diarrhoea. The study was extended for two years and covered different seasons (Winter, Autumn and Summer) of the years 2010, 2011 and 2012. According to the questionnaire survey results of 500 farms, the two first weeks of calf's age are the most hazardous and the risk decreases to 79.0%, 73.6% and 10.0% in third, fourth, fifth weeks respectively. There are losses of calves due to calf diarrhoea and adoption of different treatment trials of calf diarrhoea. The majority of the owners preferred Diaclean (77.6%), Tetracycline (69.2%) and Sulphonamides (58.0%) and the minority paid attention to fluid therapy (15.0%), Ciprofloxacin (35.8%) and Colipra (31.8%). Nine point four percent of the owners gave no treatment of calf diarrhoea and only decreased frequency of milk sucking of calves.

Cases of calf diarrhoea were reported in 300 out of 500 farms in Khartoum State with incidence rate of 60%. The incidence was higher during autumn seasons and winter seasons than summer seasons.

Among 300 diarrhoeic calves which were the sources of samples, the mortality rate was higher during first and second weeks (29.8% and 20.0% respectively) than the third week (19.1%).

A total of 300 faecal samples were collected from different localities of Khartoum State and a total of 342 bacterial isolates were obtained. According to the cultural characteristics, bacterial morphology and biochemical reactions results, the identified bacteria were: *Escherichia coli* (76.0%), *Escherichia fergusoni* (2.3%), *Escherichia vulneris* (0.6%), *Klebsiella pneumonia sub spp. Ozaenae* (6.4%), *Proteus mirabilis* (8.8%), and *Enterococcus faecalis* (5.8%).

Ninety *E. coli*, 8 *Escherichia fergusoni* and 2 *Escherichia vulneris* isolates were confirmed with API 20E strips. Different identification

percentages ranged from 89.8% to 99.8% were obtained by API 20E strips. Twenty *E. coli* isolates scored high probability percentages ranged from 96% to 99% by using VITEK2 system. This is the first report in Sudan of using VITEK2 automated identification system for identification of *E. coli* isolates.

One hundred and ten *E. coli* isolates selected randomly and tested for specific fimbrial antigens possession. Fimbrial adhesins were detected in tested isolates with different percentages. K99 (F5) (17.3%), K88 (F4) (15.5%) and 987p (F6) was detected (as a new finding), with the percentage of 1.8%.

Fifty *E. coli* isolates were selected randomly and examined for their production of STa by using Suckling mouse test. Forty five isolates (90.0%) were positive. These 50 *E. coli* isolates used in SMT test were subjected to LT enterotoxins production ability test by using RPLA kit. Ten isolates (20%) gave positive results. This is the first report in Sudan of detection of LT in *E. coli* isolated from diarrhoeic dairy calves by using RPLA kits.

In this study 150 isolates out of 260 *E. coli* isolated from diarrhoeic samples were subjected to sensitivity tests using 10 antimicrobials in use for treatment of calf diarrhoea in Sudan. Ninety six point seven percent of the isolates were sensitive to Gentamycin, 90.7% to Ampicillin, 84.0% to Ciprofloxacin, 80.0% to Sulphamethoxazole-trimethoprim, 76.0% to Cephalothin, 74.6% to Kanamycin, 74.0% to Chloramphenicol, 70.0% to Tetracycline, 15.3% to Erythromycin and 0.0% to Procaine Penicillin.

XIII