4.2.4. Study on Productivity/Meat Quality/Microbiological Condition

Six hundred cockerels were individually weighed and the plus/minus variants excluded from the trial (19). Based on data from bacteriological examination for *Salmonella* sp. by cloacal swabbing, the basal state of contamination (infection) of the chicken was determined. In the drinking water of some groups, 10^8 orgs./ml. of a 24 hour-culture of *Salmonella enteriditis* was mixed every day as an artificial super-infection challenge. The drinking water was treated with sodium dichloroisocyanurate in concentrations of 5 and 20mg/l available chlorine between days 21 - 49. Changes in the chickens' live weight, feed consumption and clinical state were followed-up continuously. The birds that died during trial, and the randomly selected animals from each treatment, were necropsied at the end of the experiment and histopathologically studied. After slaughtering on day 49, ten average, representative chickens were examined for carcass/meat quality and bacteriological status, (mainly for the presence of *Salmonella* sp.). The experimental protocol is laid out in Table 7 and the results are detailed in Tables 8 and 9.

Table 7 Six groups were arranged according to *Salmonella* infection and treatment regime as follows

Group 1	Control – ***Salmonella*** free
Group 2	Naturally *Salmonella* free Artificially infected with *Salmonella* challenge Treated with 5mg/l Aquasept ®
Group 3	Basal Contamination with *Salmonella* Artificially infected with *Salmonella* challenge Treated with 20mg/l Aquasept ®
Group 4	Naturally *Salmonella* free Artificially infected with *Salmonella* challenge Treated with 20mg/l Aquasept ®
Group 5	Basal Contamination with *Salmonella* Treated with 20mg/l Aquasept ®
Group 6	Basal Contamination with *Salmonella* Treated with 5mg/l Aquasept ®

Table 8 The effect of treating the drinking water with Aquasept ® on weight gains, feed conversion efficiencies (FCE) and mortality

Group	Weight Gain		FCE		Mortalities	
No	Mean gms	%	Ave kg/kg	%	Died	Culled
1	1570.0	100.00	2.39	100.00	8	0
2	1679.31	106.94	2.11	88.24	2	3
3	1657.65	105.61	2.03	84.94	2	1
4	1717.23	109.49	1.93	80.75	2	4
5	1389.37	88.47	2.28	95.40	3	6
6	1618.67	103.12	2.15	90.00	3	3

During the 4 week administration of Aquasept®, cocks drinking the treated water had significantly greater weight gains than the control, (with the exception of Group 5). Groups 4 (9.49% greater weight gain) and 2 (6.94%) giving the best results. F.C.E. was also better in all treated groups than in the control; Groups 4 and 3 giving the best results.

Table 9 *Salmonella* infectivity measured by taking cloacal swabs

Group	Salmonella Infectivity
1	100% Negative
2	80% Negative (32 out of 40)
3	85% Negative (17 out of 20)
4	80% Negative (16 out of 20)
5	74.2% Negative (89 out of 120)
6	78.4% Negative (94 out of 120)

The number of *Salmonella* carrier birds (100% in Groups 2 to 6) was reduced by 74.2% up to 85%. There was no significant difference between the 5 and 20mg/l dosages (see table 7). All birds treated with 20mg/l showed evidence of diarrhoea.