4. Validations and Field Trials

In validating the effectiveness of the product, Medentech has taken the basic criteria from the World Health Organization Guidelines for Drinking-water Quality for human consumption. In summary, water quality standards should ensure:

- No faecal (*E. coli* or thermotolerant), coliform counts in a 100ml sample
- No total coliform counts in a 100ml sample.

Where chlorination is used to produce safe water there should be:

- a residual concentration of free chlorine $\geq$ 0.5 mgs/litre (p.p.m.)
- but not greater than 5mgs/litre (p.p.m.)

To validate the effectiveness of Aquasept1000®, Medentech has undertaken many trials throughout the world, in a wide variety of water sources. These independent studies verify the effectiveness of Aquasept1000® in meeting the water quality standards required.

The Aquasept1000® tablets have a double action; Firstly, the tablet releases free chlorine to kill most harmful organisms. Secondly, the tablet adjusts the acidity of the water resulting in a slight increasing of the acidity levels in the gut of the livestock which in-turn activates stomach enzymes to promote more efficient food conversion. In addition, the gut acidification decreases the ability of pathogens to grow in the digestive tract.

The beneficial effects of Aquasept® have been demonstrated in a number of field trials demonstrating increased weight gain; reduced mortality rates; increased egg laying activity; marginally increased egg size. In addition, studies have demonstrated an improvement in meat quality with a significant reduction in salmonella incidences in study of a pig farm.

In a broiler chicken farm of 180,000 birds per cycle, and with a background of faecal contamination in the water supply, two coops were chosen at random to evaluate the effectiveness of Aquasept1000®. Before the addition of Aquasept® both coops (sheds) had high counts of aerobic mesophilic and coliform bacteria in the water supply. After treatment the counts reduced to zero.

In another study, 150 laying birds (Lohman) were divided into two equal groups. The control group received untreated drinking water, and the experimental group received water treated with Aquasept1000®. The tablets were added to closed plastic tanks situated on the roof of the chicken house. The levels of egg laying, egg breakage, food and water requirements, and shell qualities were measured over a 4 month period. There was a significant difference reported in the fall-off of the laying performance - 21.8% for the control group compared to 6.4% with the treated group. A marginal increase in water intake with the treated group demonstrates a tolerance to Aquaset1000® treated water. A significant reduction in the total bacterial count (Control = 1×10^7 ; Treated = 1×10^2) and total coliform count (Control = 1×10^2; Treated = 0) was also observed.

The effect on broiler growth was also assessed over a 7 week period in a separate study. Two identical chicken coops (houses) contained 10,000 and 8,000 chicklets respectively, at the start of the trial. Both groups were vaccinated against Newcastle Disease at one day old, and received a Gambin injection at 10 days old. In week 5 both groups received a Gumboro inoculation. For Coop A the water was treated with Aquasept1000®. Coop B received untreated water and acted as the control group. The average increase in weight was almost 9% for the treated group when compared to the control group. Mortality was reported as 2.8% for the treated group and 7.3% for the control group.

Aquasept1000® has also been shown to reduce Salmonella levels in a pig farm and effective in destroying Listeria monocytogenes in a dairy farm.

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