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Experimental Report – E09/03/15

EFFICACY TESTING OF PRODUCT

Bacsan point of use water purifier

LABORATORY TESTS

Tested By:

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1 Supplies Provided to Laboratory

- Product

2 Test Protocol

- Spike an untreated water sample with a bacterial suspension containing *Vibrio cholerae*, *Escherichia coli* and *Pseudomonas aeruginosa*.

  Spike levels confirmed to be:

  80 000 – 100 000 cfu/100ml for ALL pathogens.

- The spiked sample is analysed to detect the levels of all the bacteria before treatment with the product – the before sample.

- The same sample is split into 4 and treated with the product at the following concentrations:

  1:100 000
  1:75 000
  1:50 000
  1:25 000

- All four treated samples are analysed for the same parameters as the before sample at the following time intervals:

  60 minutes
  120 minutes
  240 minutes
  24 hours

- The untreated before sample as a control is analysed for the same parameters and the same time intervals as the treated samples.

- The results can be found in table 1 to 6 below.

3 Comments

The results of the experiment show that a total kill was achieved for all the microbes for the 1:100 000 concentration of the product after 240 minutes contact time. There is a general decrease in the bacterial number as the dosage is increased and with increased contact time. *Vibrio cholerae* appears to be the most susceptible to the treatment with a total kill after the first 60 minutes with all concentrations. *Pseudomonas aeruginosa* appears to be the most resistant to the treatment amongst the three microbes tested, requiring longer contact times for a total kill than the other microbes. The control sample showed a natural decrease in number that can be due to lack of nutrition in the tap water sample. The control still services to show the efficacy of the treatment since the numbers are higher than the treated samples at all times.

Over all it appears that the product was effective at rendering the water fit for human consumption after 240 minutes contact time with the lowest concentration of the product based on the microbes tested. Increased concentrations appears to bring the contact times down, with a contact time of 120 minutes required for a 1:75 000 to achieve a total kill of the microbes in question.

4 Results

Table 1: Before treatment

Determinant	Result
Escherichia coli (cfu/100ml)	84 000
Vibrio cholerae (cfu/100ml)	99 000
Pseudomonas aeruginosa (cfu/100ml)	90 000

Table 2: 1:100 000

Determinant	60 minutes	120 minutes	240 minutes	24 hours
Escherichia coli (cfu/100ml)	220	0	0	0
Vibrio cholerae (cfu/100ml)	0	0	0	0
Pseudomonas aeruginosa (cfu/100ml)	7 500	6	0	0

Table 3: 1:75 000

Determinant	60 minutes	120 minutes	240 minutes	24 hours
Escherichia coli (cfu/100ml)	1	0	0	0
Vibrio cholerae (cfu/100ml)	0	0	0	0
Pseudomonas aeruginosa (cfu/100ml)	720	0	0	0

Table 4: 1:50 000

Determinant	60 minutes	120 minutes	240 minutes	24 hours
Escherichia coli (cfu/100ml)	3	0	0	0
Vibrio cholerae (cfu/100ml)	0	0	0	0
Pseudomonas aeruginosa (cfu/100ml)	440	0	0	0

Table 5: 1:25 000

Determinant	60 minutes	120 minutes	240 minutes	24 hours
Escherichia coli (cfu/100ml)	0	0	0	0
Vibrio cholerae (cfu/100ml)	0	0	0	0
Pseudomonas aeruginosa (cfu/100ml)	41	0	0	0

Table 6: Control

Determinant	60 minutes	120 minutes	240 minutes	24 hours
Escherichia coli (cfu/100ml)	79 000	70 000	63 000	4 500
Vibrio cholerae (cfu/100ml)	92 000	90 000	87 000	3 600
Pseudomonas aeruginosa (cfu/100ml)	88 000	80 000	74 000	6 200

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