Executive Summary Report
for
Ana's Farmacy

Antimicrobial activity assessment of functional vinegar product

Campden BRI were requested to carry out antimicrobial activity assessment trials of a functional vinegar product.

The product recipe is based on apple cider vinegar, that has been macerated with culinary spices reported in scientific literature to possess antibacterial activity against common pathogens.

The antimicrobial activity of the vinegar product was assessed using a disc diffusion assay. The assay was carried out against 14 bacterial species with three replicate tests for each strain. Two samples were tested: the functional vinegar product, and the functional vinegar product which had been filter sterilised. Both samples were soaked onto 6mm sterile filter discs. The discs were placed onto an agar plate inoculated with the test organism in such a way as a lawn of growth is produced post incubation. The agar plates were inoculated under conditions suitable for the test organism. Post incubation, the resulting zones of inhibition were measured, and the results are shown in Table 1 below.

Table 1. Summary of bactericidal results.

Organism	Zone of inhibition (mm)						
	Functional Vinegar			Filter sterilised Functional vinegar			Negative control
	Rep 1	Rep 2	Rep 3	Rep 1	Rep2	Rep 3	Average
Pseudomonas aeruginosa	14	14	14	14	11	14	<6
Vibrio parahaemolyticus	14	14	13	15	15	14	<6
Clostridiodes difficile	18	16	18	16	13	14	<6
Fusobacterium nucleatum	14	14	16	14	16	16	<6

The zones of inhibition are a way of measuring the bactericidal (bacteria killing) effect of the product. A bactericidal agent kills bacteria. The larger the zone of inhibition, the greater the bactericidal effect. The product was tested against 14 bacterial strains in total and a bactericidal effect was observed against 4 strains; *Pseudomonas aeruginosa, Vibrio parahaemolyticus, Clostridiodes difficile* and *Fusobacterium nucleatum.* The effect observed against *Clostridiodes difficile* was slightly greater in the non-sterilised vinegar than in the sterilised vinegar product. A slight bactericidal effect (a zone of inhibition of <10mm) was also observed against *Escherichia coli.*

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Note this summary report has been reissued to include details on microorganisms where a slight bactericidal effect was observed

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