

**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 16 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 incubated 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
<i>Pseudomonas aeruginosa</i>	15	17	14	13	16	15	<6
<i>Vibrio parahaemolyticus</i>	14	15	15	15	16	13	<6
<i>Clostridiodes difficile</i>	14	13	13	15	13	15	<6
<i>Campylobacter jejuni</i>	16	*	15	15	15	14	<6
<i>Sphingomonas aquatilis</i>	Slight Bactericidal effect observed in non-filtered product			10	14	14	<6
<i>Eggerthella lenta</i>	12	12	12	11	12	10	<6

\*unmeasurable result

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 16 bacterial strains in total and a bactericidal effect was observed against 6 strains, as described in Table 1. A slight bactericidal effect (a zone of inhibition of <10mm) was also observed against 5 strains: *Salmonella typhimurium*, *Citrobacter youngae*, *Staphylococcus aureus*, *Yersinia enterocolitica* and *Fusobacterium nucleatum*.

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