

## **Antibacterial Activity of *Nigella sativa* (Black Seed) Oil towards *Bacillus cereus* and *Escherichia coli***

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### **Structured Abstract**

**Background:** Gastrointestinal infections caused by *Bacillus cereus* and *Escherichia coli* pose a threat to human health. The antibacterial resistance in both strains makes it difficult to treat these infections effectively. *Nigella sativa* has been used for centuries for its medicinal properties as it contains thymoquinone; a compound known to exhibit anti-inflammatory, antimicrobial, and anticancer activities. This study aims to investigate the antibacterial properties of *N. sativa* oil against *B. cereus* and *E. coli*, determine the minimum inhibitory concentration (MIC) and the percentage inhibition of diameter growth (PIDG) value.

**Methods:** The susceptibility testing was conducted using disk diffusion method where the formation of inhibition zones was observed and measured around the disk impregnated with the oil after overnight incubation. The determination of MIC value was performed using the broth microdilution method to observe at which lowest concentration of the *N. sativa* oil can inhibit the growth of *B. cereus* and *E. coli*. The PIDG value was calculated to evaluate the significance of the antibacterial activity exhibited by the *N. sativa* oil and applying the statistical analysis.

**Results:** The *N. sativa* oil possesses antibacterial properties that can contribute to the growth inhibition of *B. cereus* and *E. coli* which was observed from the formation of the inhibition zones. The MIC value of *N. sativa* oil towards both *B. cereus* and *E. coli* was recorded as 0.11 mg/mL suggesting that the *N. sativa* oil have significant inhibitory effect. However, the PIDG value for *B. cereus* and *E. coli* yields negative value which indicates it is less effective compared to commercial antibiotics in inhibiting bacterial growth.

**Conclusion:** In conclusion, the findings from susceptibility testing and MIC indicates the *N. sativa* oil shows antibacterial activity against *B. cereus* and *E. coli*.

**Keywords:** *Nigella sativa* oil, gastrointestinal infections, disk diffusion, minimum inhibitory concentration, percentage inhibition of diameter growth.

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