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Antibacterial activity of total extracts and essential oil of *Nigella sativa* L. seeds in miceHosseinzadeh, H.^a, Fazly Bazzaz, B.S.^b, Haghi, M.M.^c^a Pharmaceutical Research Center, Faculty of Pharmacy, Mashhad University of Medical Sciences (MUMS), Mashhad, Iran^b Department of Pharmaceutical Microbiology, Bu Ali Biotechnology Research Center and School of Pharmacy, MUMS, Mashhad, Iran^c School of Pharmacy, MUMS, Mashhad, Iran

Abstract

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The purpose of this study was to evaluate the antibacterial activity of total crude extracts and essential oil (EO) of *Nigella sativa* L. seeds in mate mice infected intraperitoneally with *Staphylococcus aureus* or *Escherichia coli* (0.1mL from 10⁶ colony forming units/ml suspension). After 24 hours, the infected mice were subjected to different doses of TE or EO or received 33 mg/kg of gentamicin (a positive control) or 0.4 mL of normal saline (a negative control). After 24 hours, aspirated specimens from intraperitoneal fluids were cultured on a soybean casein digest agar plate surface. The inhibitory effect of the methanol extract at a dose of 2.14 g/kg in mice infected with *S. aureus* was 87.5%. The doses of 1.2 and 2.14 g/kg in mice infected with *E. coli* were 100% compared with mice who received saline (the negative control). While the aqueous extract did not show any inhibitory effect on either micro-organism, the effect of the chloroform extract at dose of 2.6 g/kg and 33 mg/kg gentamicin (the positive control) was 100 %. The EO at dose of 0.3 g/kg in mice infected with *S. aureus* and *E. coli* showed 100% inhibitory effect compared with mice who received saline. *N. sativa* methanol and chloroform seed extracts as well as its essential oil have dose dependent antibacterial activities on the Gram-positive and Gram-negative organisms.

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Author keywords

Antibacterial activity; Black cummin; *Escherichia coli*; *Nigella sativa*; *Staphylococcus aureus*

Indexed Keywords

EMTREE drug terms: agar; casein; chloroform; essential oil; gentamicin; *Nigella sativa* extract; soybean proteinEMTREE medical terms: animal experiment; animal model; antibacterial activity; article; bacterium culture; colony forming unit; controlled study; dose response; drug effect; drug efficacy; drug mechanism; Enterobacter infection; *Escherichia coli*; male; mouse; nonhuman; peritoneal fluid; plant seed; *Staphylococcus aureus*; *Staphylococcus* infection

Chemicals and CAS Registry Numbers: agar, 9002-18-0; casein, 9000-71-9; chloroform, 67-66-3; gentamicin, 1392-48-9, 1403-66-3, 1405-41-0; soybean protein, 9010-10-0

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