

TITLE: DETERMINATION OF MINIMUM BACTERICIDAL CONCENTRATION OF EUGENOL AGAINST ENTEROTOXIGENIC *Escherichia coli*

AUTHORS: GONÇALVES, M.C.; PINELLI, J. J.; PAGNOSSA, J.P.; DA SILVA, M.A.; PEREIRA, L. A. S.; SILVA, P.C.; PICCOLI, R. H.

INSTITUTION: FEDERAL UNIVERSITY OF LAVRAS, AV. DOUTOR SYLVIO MENICUCCI, 1001 - KENNEDY, LAVRAS - MG, 37200-000

ABSTRACT:

The antimicrobial properties of essential oils and/or its major compounds attracted the interest of food industries being considered as an alternative to common chemical compounds by the use of natural additives in products, which is a crescent demand of customers. Eugenol, the phenylpropanoid major compound of clove essential oil (*Syzygium aromaticum*), has effect over the bacterial cell surface causing damages on cell wall and membrane. The search for bioactive compounds from plants exhibit great interest for food safety purposes because of their bactericidal and bacteriostatic activity. Enterotoxigenic *Escherichia coli* (ETEC) is commonly associated to food outbreaks worldwide causing high incidence of mortality and the relative facility of contamination brings even more attention to its control. The aim of this work was the determination of minimum bactericidal concentration (MBC) of eugenol against ETEC ATCC 35401 using microdilution technique in 96 well polystyrene microplate. 150 µL aliquots of BHI broth with addition of 0,5% of Tween 80 (v/v) were added in microplates at concentrations of: 0.015; 0.03; 0.062; 0.125; 0.25; 0.50; 1.00 and 2.00 % (v/v) of eugenol. Then, 10 µL of standard culture (10^8 CFU/mL) of ETEC were added into cavities followed by 37°C/24h incubation. Finally, MBC was confirmed plating 10µL of each cavity on TSA (Tryptyc soy broth) by microdrop technique. MBC of major compound occurred with no bacterial growth observed on plates after incubation. According to results, concentration of 1.0% of eugenol was the lowest able to inhibit ETEC growth, being chosen as MBC. Eugenol is pointed as a potential food industry alternative against contaminations due its efficiency in low concentrations. This work suggests that eugenol has great potential in food industry minimizing impact of flavor on foods or smell on sanitizers aligned with microbiological safety.

Keywords: essential oil; bactericidal activity; food poisoning.

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