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“Filling gaps and removing traps
for sustainable resource management”

Potential of Essential Oils in Filling Gaps and Removing Traps for Sustainable Poultry Production

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Abstract

Essential oils extracted from plant materials are aromatic, volatile and oily liquids which can serve as alternatives to antibiotics. Essential oils have antimicrobial, anti-inflammatory, anti-oxidative and coccidiostatic properties. The essential oil of *Ocimum gratissimum* (lyn) a medicinal plant consumed as a spice in Nigeria was extracted to determine its in-vitro antibacterial activity against *Salmonella enteritidis*, *Salmonella typhimurium* and *Clostridia perfringens* isolated from poultry litter. The oil was extracted with the means of a Clevenger and placed in an amber bottle before antibacterial studies was carried out. The bacteria *S. enteritidis*, *S. typhimurium* and *C. perfringens* were isolated using bacteria specific agar after serial dilution of poultry litter collected from poultry pens. *Clostridium perfringens* was cultured on Reinforced *Clostridia* Agar while *Salmonella* were sub cultured from *Salmonella shigella* agar onto Mueller Hinton Agar to remove the effects of indicators and suppressive chemical agents in primary isolation media. The disc diffusion method was used to determine the zone of inhibition (ZOI – in mm) of *O. gratissimum* essential oil against the 3 bacteria. The oil was standardised to 80 %, 40 % and 20 % respectively with the aid of 2 % pharmaceutical grade laboratory soap.

The essential oil of *O. gratissimum* was elicited antibacterial property against all three bacteria tested. The ZOI against *S. typhimurium* was 40.00 mm (80 %), 35.00 mm (40 %) and 25.00 mm (20 %) respectively. Values recorded for *S. enteritidis* were 28.00 mm (80 %), 25.00 mm (40 %) and 23.00 mm (20 %). The essential oil cleared *C. perfringens* at all levels of treatment with the oil. A value of > 40.00 was recorded.

From the results obtained it can be concluded that *O. gratissimum* essential oil has potential filling gaps and removing traps for sustainable poultry production in Nigeria.

Keywords: Antibiotics, *Clostridia perfringens*, essential oil, *Salmonella enteritidis*, *Salmonella typhimurium*