

## **Inhibition of *Escherichia coli* and *Salmonella* spp. By Traditional Phytomedicines That Are Commonly Used to Treat Gastroenteritis in Zimbabwe**

**Authors :** Constance Chivengwa, Tinashe Mandimutsira, Jephris Gere, Charles Magogo, Irene Chikanza, Jerneja Vidmar, Walter Chingwaru

**Abstract :** The use of traditional methods in the management of diarrhoea has remained a common practice among the indigenous African tribes of Southern Africa. Despite the widespread use of traditional medicines in Zimbabwe, very little research validating the activities of phytomedicines against diarrhoea, as claimed by the Shona people of Zimbabwe, has been reported. This study sought to determine the efficacies of the plants that are frequently used to treat stomach complaints, namely *Dicoma anomala*, *Cassia abbreviata*, *Lannea edulis* and *Peltophorum africanum* against *Escherichia coli* (an indicator of faecal contamination of water, and whose strains such as EHEC (O157), ETEC and EPEC, are responsible for a number of outbreaks of diarrhoea) and *Salmonella* spp. Ethanol and aqueous extracts from these plants were obtained, evaporated, dried and stored. The dried extracts were reconstituted and diluted 10-fold in nutrient broth (from 100 to 0.1 microgram/mL) and tested for inhibition against the bacteria. *L. edulis* exhibited the best antimicrobial effect (minimum inhibition concentration = 10 microgram/mL for both extracts and microorganisms). Runners up to *L. edulis* were *C. abbreviata* (20 microgram/mL for both microorganisms) and *P. africanum* (20 and 30 microgram/mL respectively). Interestingly, *D. anomala*, which is widely considered panacea in African medicinal practices, showed low antimicrobial activity (60 and 100 microgram/mL respectively). The high antimicrobial activity of *L. edulis* can be explained by its content of flavonoids, tannins, alkylphenols (cardanol 7 and cardanol 13) and dihydroalkylhexenones. The antimicrobial activities of *C. abbreviata* can be linked to its content of anthraquinones and triterpenoids. *P. africanum* is known to contain benzenoids, flavanols, flavonols, terpenes, xanthone and coumarins. This study therefore demonstrated that, among the plants that are used against diarrhoea in African traditional medicine, *L. edulis* is a clear winner against *E. coli* and *Salmonella* spp. Activity guided extraction is encouraged to establish the complement of compounds that have antimicrobial activities.

**Keywords :** diarrhoea, *Escherichia coli*, *Salmonella*, phytomedicine, MIC, Zimbabwe

**Conference Title :** ICPPNP 2016 : International Conference on Pharmacognosy, Phytochemistry and Natural Products

**Conference Location :** London, United Kingdom

**Conference Dates :** September 29-30, 2016