**IN VITRO ANTIMICROBIAL ACTIVITY OF NATIVE SOUTH DAKOTA PLANT EXTRACTS ON ESCHERICHIA COLI**

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**ABSTRACT**

Antimicrobial activity of extracts of 22 plants native to South Dakota were screened and evaluated against *Escherichia coli* H157 K88 LT STB strain, a major cause of diarrhea in swine. Disk diffusion assay was used for initial screening, and antimicrobial activity of potentially active plant extracts were further assessed using a microplate broth dilution method and a viable plate count method. Out of 22 plant methanol extracts, those of *Sanguinaria canadensis*, *Rhus aromatica* and *Rhus glabra* had significant antimicrobial activity. In the disk diffusion assay the inhibition zones were 13.66 mm, 8.66 mm and 8.66 mm respectively which compared favorably to the gentamicin controls (14.66 mm). The minimum inhibitory concentrations (MIC) for *Sanguinaria canadensis*, *Rhus aromatica* and *Rhus glabra* were 6.25 mg/ml, 50 mg/ml and 25 mg/ml respectively. The extract was partitioned in hexane, methylene chloride and methanol. The methanol fraction showed maximum inhibitory effect. Further fractionation of the methanol extracts was conducted using C18 preparatory columns eluted with 50%, 75% and 100% methanol after which these fractions were tested against *E. coli*. The active fraction was further separated using HPLC with Phenyl-Hexyl column. Cytotoxicity to animal cells (IPECJ2) was tested in vitro following standard DNA BrdU incorporation assay. The toxic effects were found to be significantly less than controls even at higher concentrations. HPLC purification of individual compounds is in progress and MS and NMR evaluations are planned for this summer.