Antimicrobial effects of quinolines against harmful intestinal microorganisms

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The growth responses of *Ruta chalepensis* leaf-derived materials toward human intestinal bacteria were examined.[1-4] The biologically active constituent of the *R. chalepensise* extract was characterized as quinoline-4-carboxaldehyde ($C_{10}H_7NO$). The growth responses varied depending on the bacterial strain, chemicals, and dose tested. At 0.25 and 0.1 mg/disk, quinoline-4-carboxaldehyde strongly inhibited the growth of *Clostridium perfringens* and weakly inhibited the growth of *Escherichia coli* without any adverse effects on the growth of three lactic acid-bacteria. Furthermore, at 0.05 and 0.025 mg/disk, this isolate showed moderate activity against *C. perfringens*. In comparison, chloramphenicol at as low as 0.01 mg/disk significantly inhibited the growth of all bacteria tested, and cinnamaldehyde at 0.25 mg/disk did not inhibit *Bifidobacterium. bifidum*, *B. longum*, *E. coli*, and *Lactobacillus acidophilus* with the exception of *C. perfringens*. The structure-activity relationship revealed that quinoline-3-carboxaldehyde had strong growth-inhibition against *C. perfringens*, but quinoline, quinoline-3-carboxylic acid, and quinoline-4-carboxylic acid did not inhibit the growth of *B. bifidum*, *B. longum*, *C. perfringens*, *E. coli*, and *L. acidophilus*. These results indicate that carboxyl aldehyde functional group of quinolines seems to be required for growth-inhibiting activity against *C. perfringens*, Thus indicating at least one of the pharmacological actions of *R. chalepensis* leaf.[5-8]

References

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