

Anti-helicobacter pylori and urease inhibition activities of some traditional medicinal plants.

ABSTRACT

Different parts of *Acacia nilotica* (L.) Delile, *Calotropis procera* (Aiton) W.T. Aiton, *Adhatoda vasica* Nees, *Fagonia arabica* L. and *Casuarina equisetifolia* L. are traditionally used in folk medicine for the treatment of a variety of common ailments like nausea, cold, cough, asthma, fevers, diarrhea, sore throat, swelling, etc. The present study was aimed to evaluate the anti-*Helicobacter pylori* and urease inhibition activities of extracts produced from the above selected medicinal plants native to Soon Valley (home to an old civilization) in the Punjab province of Pakistan. Methanol, acetone and water extracts of the plants were evaluated for anti-bacterial activity against thirty four clinical isolates and two reference strains of *H. pylori*. Minimum inhibitory concentrations (MICs) of the extracts were determined using the agar dilution method and compared with some standard antibiotics like amoxicillin (AMX), clarithromycin (CLA), tetracycline (TET) and metronidazole (MNZ), used in the triple therapy for *H. pylori* eradication. *H. pylori* urease inhibition activity of the extracts was assessed by the phenol red method, wherein, Lineweaver-Burk plots were used to determine Michaelis-Menten constants for elucidating the mechanism of inhibition. Methanol and acetone extracts from *Acacia nilotica* and *Calotropis procera* exhibited stronger anti-*H. pylori* activity than MNZ, almost comparable activity with TET, but were found to be less potent than AMX and CLT. The rest of the extracts exhibited lower activity than the standard antibiotics used in this study. In the *H. pylori* urease inhibitory assay, methanol and acetone extracts of *Acacia nilotica* and *Calotropis procera* showed significant inhibition. Lineweaver-Burk plots indicated a competitive mechanism for extract of *Acacia nilotica*, whereas extract of *Calotropis procera* exhibited a mixed type of inhibition.

Keyword: Medicinal plants; Anti-*Helicobacter pylori* activity; Agar dilution method; Urease inhibitory activity; Lineweaver-Burk plots; Inhibition kinetics