Study of the antibacterial activity of Malva Neglecta

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Received 15/1/2006; Accepted 27/3/2006

Abstract
Different extract of Malva neglecta were investigated for their antibacterial against Streptococcus pneumonia, Staphylococcus. aureus. Haemophilus. Influenza. Moraxella, catarrhalis. Almost all extract produced significant antibacterial activity against all microorganism the in comparism with Gentamicin sulphate. Petroleum.ether was more effective than the other extract. The flavonoids was separated on silica gel thin layer chromatography and responsible for this activity the study determined that antibacterial action is related to flavonoid.

Abstract
دراسة الفعالية المضادة للمضادات البكتيرية لخلاصة نبات الخياز

ثامر مطلك جاسم

الخلاص
تمثل هذه الدراسة محاولة تحديد بعض الخصائص المضادة للمضادات البكتيرية لخلاصة نبات الخياز لـ Streptococcus.Pneumonia-Staphylococcus.aureus-Haemophilus.Influenzae-Moraxella.catarrhalis
أظهرت كل الخلاصات تأثيرًا بكتيرياً واضحًا ضد البكتيريا المذكورة أعلاة وهذا التأثير تم مقارنته مع المضاد الحيوي جنتاميسين سلفات. وجد أن خلاصة البتروتيم أظهرت هي أكثر فعالية من بقية الخلاصات تم فصل مادة الفلافونويدات المسؤولة عن هذه الفعالية. على الطبقة الواقية من السلكاجيل كروماتوغرافي. أظهرت فاعليّة الفلافونويدات ضد البكتيريا المذكورة أعلاة.
Introduction

Plants – derived medicine have been part of the traditional healthcare in most part of the world for thousands of years (1). With the alarming incidence of antibiotic resistance in bacteria of medical importance (2). There is increasing interest in plants as sources of agents for the treatment of microbial disease. Plants contain numerous compounds biologically active compounds and may of these have been shown a variety of plants to exhibit antimicrobial properties (3). In Iraq variety of plants are widely use in folk medicine (4, .5) Some of these plants have been systematically studied for their clinical and biological properties (6,7). Many reports published in this respect indicate that these plants as antimicrobial (8,9). The aim of the present study was to evaluate the antibacterial activity of Malva neglecta.

Materials and Methods

The Malva neglecta species are identified and atenicated by the Iraqi National Herbarium Baghdad.

Extraction procedure

The leaves parts were cleaned and dried at room temperature and ground to powder for extraction. Malva neglecta powder was dissolved in distilled water and separated on Silica gel TLC plates developed in (Butanol: Acetic acid: water). 40:10:2.5). Location of the spot was determined by spraying the plate with methanolic LOH. The alcoholic extract (5ml, corresponding to 1g of plant material was treated with a few drops of concentrated HCL and magnesium tuning (0.5g). The presence of flavonoids was indicative of pink or magnetic- red colour developed with 3min(10). The sample were extracted with petroleum ether, chloroform, ethanol, water by percolation for 24 hours according to Baronet, et.al 1994 (11).

Antibacterial assay

Two Gram positive and two Gram negative clinical isolate were identified as in Baronet et al (11). Stock solution of 150 mg / ml and their serial double solution were performed according to Ty ler 1996 (12) in (12). Agar diffusion technique was used for screening antibacterial activity. Agar dilution technique was conducted using Mueller Hinton agar plate (13), to determine minimum inhibitory concentration (MIC). Gentamicin sulphate (25 Mikrogram/ ml) was used as positive control and propylene glycol( the vehicle used for dissolving different residue) was used as negative control.

Results

The major chemical compounds of the plants under study was flavonoides. The petroleum ether gave inhibition zone ranges from 15 to 19 mm, chloroform extracts showed inhibition zone ranges of 13to 14 mm, water no effect, and ethanol extracts present inhibition zone ranges of 15 -18 mm (Table1). The minimum inhibitory concentration MIC ranges were 3.125-25 for petroleum ether 50-200 for chloroform, 25-100 water, and 6.25-50 mg / ml for ethanol (Table 2) S. aureus, M catarralis sensitive to all test extract. M. catarralis sensitive to ethanol alone H. influenzae Strep. Pneumonia resistant to all test extracts except petroleum ether was the most effective among the others.

Discussion

This study has evaluated the antibacterial activity of Malva neglecta commonly in Iraq Petroleum ether were proved to be a good solvent in extracting inhibitory substances from tested plants (14). The have not been previously reported in the literature for their flavonoid Different study about the antibacterial of herbal extract but this is the first study about the antimicrobial effect of Malva neglecta on the pathogenic microorganism the
Malva neglecta may play role in the antimicrobial activity. These results have encouraged use to undertake further studies regarding the isolation and characterization of the active principles present in the active extracts(9). Different studies about the antibacterial of herbal extract but this is the first study about the antibacterial effect of Malva neglecta Wang et al (15) showed the presence of three potent antimicrobial protein named (cw-3), (cw-4), (cw-5) showed different antimicrobial spectorurn (16). These result showed the importance of plant extracts is achemotherapeutic agents (17) . Further studies of the antibacterial properties of these extracts and elucidation of the compounds responsible for the activities is warranted.

Table (1) : Diameter of inhibition zones for different extracts of Malva neglecta against bacterial species

<table>
<thead>
<tr>
<th>Solvent extraction</th>
<th>S. aureus</th>
<th>Strep pneumonia</th>
<th>H. influenzae</th>
<th>M. catarralis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum ether</td>
<td>19</td>
<td>-</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>Chloroform</td>
<td>13</td>
<td>-</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethanol</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>15</td>
</tr>
</tbody>
</table>

Gentamicin S 20 21 22 20

no inhibition zone

Table (2): Minimum inhibitory concentration (MIC) mg/ml for different extract of Malva neglecta

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Petroleum ether</th>
<th>Chloroform</th>
<th>Water</th>
<th>Ethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. aureus</td>
<td>6.25</td>
<td>50</td>
<td>25</td>
<td>6.25</td>
</tr>
<tr>
<td>Strep pneumonia</td>
<td>12.5</td>
<td>200</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>H. influenzae</td>
<td>25</td>
<td>100</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>M. catarralis</td>
<td>3.125</td>
<td>50</td>
<td>25</td>
<td>12.5</td>
</tr>
</tbody>
</table>

References


