**Table 1**

Phytochemical screening of water and ethanol extract of *Senna alata* leaves.

|  |  |  |
| --- | --- | --- |
| **Phytochemical constituents** | **Specific tests** | **Result** |
| **Methanol extract** |
| Alkaloid | Mayer's test | - |
| Wagner test | - |
| Hager’s test | - |
| Dragendroff’s test | - |
| Carbohydrate | Molish's test | + |
| Benedict's test | + |
| Glycoside | Modified Borntrager test (Anthraquinones) | - |
| Killer killiani test (Cardiac glycoside) | + |
| Saponin | Foam test | + |
| Phenol | Ferric chloride test | + |
| Flavonoid | Alkaline reagent test | + |
| Shinoda test | + |
| Zn-HCl test | + |
| Tannin | Gelatin test | + |
| Ferric Chloride test | + |
| Terpenoid | Salkowaski test | - |
| Copper acetate test | - |
| +: Presence, -: Absence | | |

**Table 2**

GC –MS analysis

|  |  |  |  |
| --- | --- | --- | --- |
| **S.N** | **Name of Compound** | **Molecular formula** | **Reported Activity** |
| 1 | 3-Methylmannoside | C7H14O6 | Plant growth regulator/ regulate plant growth by modulating glycoconjugation to lectins in plants |
|
| 2 | Neophytadiene | C20H38 | Antimicrobial, additive for liquid cigarette |
|
|
| 3 | Squalene | C30H50 | Antioxidant |
| 4 | Campesterol | C28H48O | Anticancer, Antimicrobial , anti-inflammatory |
| 5 | Stigmasterol | C29H48O | Anticancer, Antiinflammatory |
|
| 6 | Alpha.Tocospiro | C29H50O4 | Cytotoxicity against human A549 cells by SRB assay. |
| Antimicrobacterial activity against Mycobacterium tuberculosis H37Rv |
|  |

**Table 3**

Extraction yield (%) of three solvents of *Senna alata* leaves, total phenolic and flavonoids content.

|  |  |  |  |
| --- | --- | --- | --- |
| **Extract** | **Extraction yield (%)** | **Phenols (mg GAE/g dry extract weight)** | **Flavonoids (mg QE/g dry extract weight)** |
| Methanol extract | 5.92 | 46.36±4.5 | 480.4±3.055 |
| Hexane extract | 1.54 | 44.89±4.49 | 476.17±4.33 |
| Ethyl acetate | 0.78 | 40.66±0.36 | 435.77±4.81 |
| Values calculated from the mean of three times experiment and represented as mean ± S.D | | | |

### 

**Table 4**

IC50 value and DPPH free radical scavenging activity of both *Senna alata* extracts at varying concentrations.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Extract/ Standard** | |  | | **% activity of DPPH scavenging** | | |  | **IC50 µg/mL** |
| **5 µg/mL** | **10 µg/mL** | | **15 µg/mL** | **20 µg/mL** | **25 µg/mL** |
| Methanol extract | | 15.13±0.0093 | 24.65±0.0063 | | 29.28±0.0094 | 37.33±0.0290 | 42.83±0.0049 | 29.81 |
| Ascorbic acid | | 41.19±0.0090 | 61.69±0.0012 | | 75.59±0.0050 | 92.56±0.0050 | 97.07±0.0080 | 6.12 |
|  | Values calculated from the mean of three times experiment and represented as mean ± standard deviation (n=3). | | | | | | | |

**Fig. 1.** Antioxidant activity by using DPPH.

**Table 5**

Percentage clot lysis of extract.

|  |  |  |
| --- | --- | --- |
| **S.N** | **Concentration(mg/ml)** | **% clot lysis** |
| Extract 1 | 10 | 7.89 |
| Extract 2 | 25 | 10.13 |
| Streptokinase | 30,000 I.U | 40.77 |
| Negative control | D/W | 2.03 |
|  |  |  |

**Fig. 2.** Thrombolytic activity of the extract.

**Table 6**

Percentage protection and percentage hemolysis of extract and standard.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Concentration(μg/ml) | Percentage Protection | | % hemolysis | |
| Diclofenac | Extract | Diclofenac | Extract |
| 10 | 19.21 | 4.5 | 80.79 | 95.46 |
| 20 | 21.62 | 7.4 | 78.38 | 92.75 |
| 40 | 24.32 | 10.32 | 75.68 | 89.62 |
| 80 | 29.81 | 18.16 | 70.19 | 77.90 |
| 100 | 36.51 | 23.32 | 63.49 | 75.17 |

**Fig. 3.** Anti-inflammatory activity of standard and extract.

**Table 7**

EC50 values for Diclofenac and extract.

|  |  |
| --- | --- |
| Name | EC50 |
| Diclofenac sodium | 8.54 |
| Extract | 9.93 |

**Fig. 4.** Anti-inflammatory activity.

**Table 8**

Percentage mortality by standard Vincristine Sulphate

|  |  |  |
| --- | --- | --- |
| Concn (μg/ml) | % mortality | LC50 value |
| 0.25 | 20 | 7.32 |
| 0.5 | 30 |  |
| 1 | 30 |  |
| 5 | 40 |  |
| 10 | 60 |  |

**Fig. 5.** Cytotoxic activity of vincristine Sulphate

**Table 9**

Percentage mortality of brine shrimp by extract.

|  |  |  |
| --- | --- | --- |
| Concentration (μg/ml) | % Mortality | LC50 (μg/ml) |
| 50 | 0 | 767.85 |
| 100 | 0 |  |
| 200 | 10 |  |
| 400 | 30 |  |
| 800 | 50 |  |

**Fig. 6.** Cytotoxic activity of extract

**Table 10** Antibacterial activity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sample** | **Concn (μg/ml)** | **Inhibition zones of antibacterial screening (mm)** | | | |
| *S. aureus* | *B. subtilis* | *K. pneumoniae* | *E. coli* |
| Azithromycin | 40 | 5 | 10 | - | - |
| 80 | 7 | 12 | - | - |
| 160 | 12 | 19 | - | - |
| 320 | 14 | 21 | - | - |
| Gentamycin | 40 | - | - | 3 | 8 |
| 80 | - | - | 3 | 9 |
| 160 | - | - | 4 | 13 |
| 320 | - | - | 7 | 15 |
| Extract | 40 | 2 | - | - | - |
| 80 | 3 | 1 | - | - |
| 160 | 4 | 2 | 1 | - |
| 320 | 6 | 4 | 2 | - |

**Fig. 7.** *Antibacterial activity**of extract against S.aureus*

**Fig. 7.** Antibacterial activityof extract against *B.subtilis.*

**Fig. 8.** Antibacterial activity of extract against *K .pneumoniae*.