5 RESULTS

5.1 Morphological and microscopic study:

The morphological studies revealed that, the strips are 5-15 cm long, greenish to hey coloured, compound fan or palm shaped. The veins are few and sub parallel to the midrib and shows dichotomous branched venation. Sori are present on the lower surface of some older leaves. Rhizomes are dark brown, hair like structures running horizontal to the surface of the soil. They are cylindrical, short and creeping. The whole plant shows underground portion of the stem rhizomes. Leaves and rhizomes are tasteless and odorless.

The transverse section of the rhizome is circular in outline. It is bounded by epidermis of single layered thin walled cells followed by cortex. Cortex is simple, composed of polygonal, small parenchymatous thin walled cells. In the central region there is stele composed of xylem and phloem. The xylem consists of pitted and scalariform tracheids. Phloem is simple. Leaf gaps are seen in the section.

The transverse section of Leaf is oblong. The differentiation of mesophyll into palisade region and spongy region is not clearly defined. The cells in the spongy region are more loosely arranged, showing intercellular spaces. The upper and lower surface of the leaf is bounded by small thin walled, brick shaped cells. On the lower epidermis multicellular sporangium are seen. They are in clusters. Sori is present on the lower epidermis at vein endings. Each sporangium is stalked surrounded by annulus and lip cells. Spores are triangular.

The morphological and microscopic study of whole plant of *Actiniopteris radiata* and *Caralluma adscendense* are reported in photograph 4-7.
Photo 4: Actiniopteris radiata (australis)
Photo 5: *Caralluma adscendens*.

**AUTHENTICATION CERTIFICATE**

We have studied the morphology of the plant specimen submitted by Shri D. R. Judge, Shree Sandukupa College of Pharmacy, Ghogao, Tal: Karad, Dist: Satara. We hereby authenticate the plant specimen *Caralluma adscendens*, var. *fimbriata* (Wall.) Grew. & Mayor, which is described on page number – 282, of the *Flora of Kolhapur District*, written by S. R. Yadav & M. M. Sandesar. The plant belongs to family – Asclepiadaceae. The report is authentic and given for internal use only.
Photo 6: T.S of *A. radiata* treated with ruthenium red.

Photo 7: T.S of *A. radiata* treated with Phloroglucinol and HCL.
5.2 Extraction of Plant Material:

Extractive values of crude drugs are useful for their evaluation especially when the constituents of the drug cannot be readily estimated by any other means. The aqueous and alcoholic extractive values were 5.2, 2.3 and 10.02, 14.42 % W/W for *Actiniopteris radiata* and *Caralluma adscendens*. The results obtained showed high alcoholic extractive value for *a. radiata* that indicates drug contain more semi polar phytoconstituents.

The extractive values of whole plants of *Actiniopteris radiata* and *Caralluma adscendens* obtained by the pharmacopoeial procedures are stated in Table 1.

Table 1: Extractive values of dried whole plants of *Actiniopteris radiata* and *Caralluma adscendens*.

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Extractive value</th>
<th>Estimated Percentage (% W/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><em>Actiniopteris radiata</em></td>
</tr>
<tr>
<td>1</td>
<td>Alcohol Soluble Extractive Value</td>
<td>5.2</td>
</tr>
<tr>
<td>2</td>
<td>Water Soluble Extractive Value</td>
<td>2.3</td>
</tr>
</tbody>
</table>

5.3 Ash value of Plant Material:

Ash values are helpful in determining the quality and purity of crude drugs, especially in powdered form. The various ash values studied where, total ash 7.5, 6.5 %, water soluble ash 1.21, 2.5 %, acid insoluble ash 3.0, 7.5 5 % and sulphated ash 2.0 and 3.0 % for *Actiniopteris radiata* and *Caralluma adscendens* respectively.

The ash value of whole plants of *Actiniopteris radiata* and *Caralluma adscendens* obtained by the pharmacopoeia procedures are reported in Table 2.
Table 2: Ash value of whole plants of *Actiniopteris radiata* and *Caralluma adscendens*.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Ash value</th>
<th>Estimated Percentage (% W/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><em>Actiniopteris radiata</em></td>
</tr>
<tr>
<td>1</td>
<td>Total Ash</td>
<td>7.5</td>
</tr>
<tr>
<td>2</td>
<td>Acid insoluble ash</td>
<td>3.0</td>
</tr>
<tr>
<td>3</td>
<td>Water soluble ash</td>
<td>1.21</td>
</tr>
<tr>
<td>4</td>
<td>Sulphated ash</td>
<td>2.0</td>
</tr>
</tbody>
</table>

5.4 Crude fiber study & Loss on drying of Plant Material:

It determines the amounts of volatile matter of any kind including water. The loss on drying was found to be 11.84 and 9.2 for *Actiniopteris radiata* and *Caralluma adscendens* respectively.

The Crude fiber study & Loss on drying of whole plants of *Actiniopteris radiata* and *Caralluma adscendens* obtained by the pharmacopoeial procedures are mentioned in Table 3.

Table 3: Crude fibre study & Loss on drying of whole plants of *Actiniopteris radiata* and *Caralluma adscendens*.

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Particular</th>
<th>Estimated Percentage (% W/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><em>Actiniopteris radiata</em></td>
</tr>
<tr>
<td>1</td>
<td>Crude fiber study</td>
<td>7.5</td>
</tr>
<tr>
<td>2</td>
<td>Loss on drying</td>
<td>11.84</td>
</tr>
</tbody>
</table>
5.5 Proximate Chemical analysis of Plant Material:

The preliminary phytochemical screening was carried out for the extracts of whole plants. The proximate chemical analysis gives the general idea regarding the nature of chemical constituents of the crude drugs. The ethanolic and aqueous extract of *Actiniopteris radiata* extract found to be consisting of saponin glycoside, carbohydrate and flavonoids, where as aqueous extract of *Caralluma adscendens* found to be consisting tannins and saponon glycosides but etanolic extract with these showed presence of carbohydrate and alkaloids.

The Proximate Chemical analysis of whole plants of *Actiniopteris radiata* and *Caralluma adscendens* obtained by the pharmacopoeial procedures are mentioned in Table 4 & 5 respectively.

Table 4(a): Proximate chemical analysis of ethanolic extract of *Actiniopteris radiata*.

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Test</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Tests for carbohydrates:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Molish's test (general test)</td>
<td>Violet ring observed</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>A. For reducing sugars</td>
<td>Brick red colour ppt.</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>a) Fehling's test</td>
<td>Green colour appears</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>b) Benedict's test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B. Tests for Monosaccharides:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Barfoed's test</td>
<td>No Red precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>C. Tests for Hexose sugars</td>
<td>No Blue or green colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>D. Tests for Non-reducing sugars:</td>
<td>No precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>Tannic acid test for starch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Tests for proteins:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>2</td>
<td>a) Biuret test (general test)</td>
<td>No violet or pink color's No precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Million's test</td>
<td>No precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>c) Xanthoprotein test</td>
<td>No precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>d) Test for protein containing sulphur</td>
<td>No black or brownish</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>e) Precipitation test:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Absolute alcohol</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>5% HgCl₂ solution</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>5% CuSO₄ solution</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>5% lead acetate</td>
<td>White precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>5% ammonium sulphate</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Tests for steroid:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>a) Salkowski reaction</td>
<td>Red colour appeared</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>b) Liebermann-Burchard</td>
<td>Blue colour appeared</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>c) Liebermann’s reaction</td>
<td>Blue Colour appeared</td>
<td>Present</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Tests for Flavonoids:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>a) Shinoda test</td>
<td>Pink colour observed</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>b) Lead acetate</td>
<td>Yellow coloured Ppt.</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>c) Sodium hydroxide</td>
<td>Discoloration</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>d) Ferric chloride test</td>
<td>Intense green colour</td>
<td>Present</td>
</tr>
</tbody>
</table>
5 | **Tests for glycosides:**
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Tests for cardiac glycosides</strong></td>
</tr>
<tr>
<td>a) Baljet's test</td>
</tr>
<tr>
<td>b) Legal's test</td>
</tr>
<tr>
<td>c) Kellar-killiani test</td>
</tr>
<tr>
<td>d) Libermann's test</td>
</tr>
<tr>
<td><strong>B. Test for Anthraquinone glycoside:</strong></td>
</tr>
<tr>
<td>a) Bontrager’s test</td>
</tr>
<tr>
<td>b) Modified Bontrager’s test</td>
</tr>
<tr>
<td><strong>C. Tests for Saponin glycosides</strong></td>
</tr>
<tr>
<td>a) Foam test</td>
</tr>
<tr>
<td>b) Hemolytic test</td>
</tr>
<tr>
<td><strong>D. Tests for Coumarin glycosides</strong></td>
</tr>
<tr>
<td>a) Test for Anthraquinone glycoside</td>
</tr>
</tbody>
</table>

6 | **Tests for amino acids:**
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Ninhydrin test</td>
</tr>
<tr>
<td>b) Test for Tyrosine</td>
</tr>
</tbody>
</table>

7 | **Tests for Alkaloids:**
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Dragendorff’s reagent</td>
</tr>
<tr>
<td>b) Mayer's reagent</td>
</tr>
<tr>
<td>c) Wagner’s Reagent</td>
</tr>
<tr>
<td>d) Hager’s reagent</td>
</tr>
</tbody>
</table>

8 | **Tests for Tannins & phenolic compounds:**
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 5% FeCl₃ solution</td>
</tr>
<tr>
<td>b) Lead acetate solution</td>
</tr>
<tr>
<td>c) Gelatin solution</td>
</tr>
<tr>
<td>d) Bromine water</td>
</tr>
<tr>
<td>e) Acetic acid solution</td>
</tr>
<tr>
<td>Sr.No</td>
</tr>
<tr>
<td>-------</td>
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</tr>
</tbody>
</table>

Table 4(b): Proximate chemical analysis of aqueous extract of *Actiniopteris radiata*. 
<table>
<thead>
<tr>
<th>3</th>
<th><strong>Tests for steroid:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) Salkowski reaction</td>
<td>Red colour appeared</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>b) Liebermann-Burchard</td>
<td>Blue colour appeared</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>c) Liebermann’s reaction</td>
<td>Blue Colour appeared</td>
<td>Present</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th><strong>Tests for Flavonoids:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) Shinoda test</td>
<td>Pink colour observed</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>b) Lead acetate</td>
<td>Yellow coloured Ppt.</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>c) Sodium hydroxide</td>
<td>Discoloration</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>d) Ferric chloride test</td>
<td>Intense green colour</td>
<td>Present</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th><strong>Tests for glycosides:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A. Tests for cardiac glycosides</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Baljet's test</td>
<td>No orange Colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Legal's test</td>
<td>No Pink to red colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>c) Kellar-killiani test</td>
<td>No reddish brown colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>d) Libermann's test</td>
<td>No blue colour colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>B. Test for Anthraquinone glycoside:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Bontrager’s test</td>
<td>No pink or red colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Modified Bontrager’s test</td>
<td>No pink or red colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>C. Tests for Saponin glycosides</td>
<td>Foam formed</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>a) Foam test</td>
<td>Hemolytic zone observed</td>
<td>Present</td>
</tr>
<tr>
<td></td>
<td>b) Hemolytic test</td>
<td>No Green fluorescence</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>D. Tests for Coumarin glycosides</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6</th>
<th><strong>Tests for amino acids:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) Ninhydrin test</td>
<td>No purple colour observed</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Test for Tyrosine</td>
<td>No red colour observed</td>
<td>Absent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7</th>
<th><strong>Tests for Alkaloids:</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a) Dragendroff’s reagent</td>
<td>No orange precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Mayer's reagent</td>
<td>No precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td>Sr.No</td>
<td>Test</td>
<td>Observation</td>
<td>Inference</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>1</td>
<td><strong>Tests for carbohydrates:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Molish’s test (general test)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. For reducing sugars</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Fehling’s test</td>
<td>No violet ring observed</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Benedict's test</td>
<td>No brick red colour ppt.</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>No green colour appears</td>
<td>No green colour appears</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>B. Tests for Monosaccharides:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Barfoed's test</td>
<td>No Red precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>C. Tests for Hexose sugars</td>
<td>No Blue or green colour</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>D. Tests for Non-reducing sugars:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tannic acid test for starch</td>
<td>No Ppt</td>
<td>Absent</td>
</tr>
<tr>
<td>2</td>
<td><strong>Tests for proteins:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Biuret test (general test)</td>
<td>No violet or pink color's</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>b) Million's test</td>
<td>No precipitate</td>
<td>Absent</td>
</tr>
</tbody>
</table>

Table 5(a): Proximate chemical analysis of ethanolic extract of *Caralluma Adscendens*. 
<table>
<thead>
<tr>
<th>c) Xanthoprotein test</th>
<th>No precipitate</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>d) Test for protein containing sulphur</td>
<td>No black or brownish</td>
<td>Absent</td>
</tr>
<tr>
<td>e) Precipitation test:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute alcohol</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td>5% HgCl₂ solution</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td>5% CuSO₄ solution</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td>5% lead acetate</td>
<td>White precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td>5% ammonium sulphate</td>
<td>No white precipitate</td>
<td>Absent</td>
</tr>
</tbody>
</table>

3 **Tests for steroid:**

| a) Salkowski reaction | Red colour appeared | Present |
| b) Liebermann-Burchard | Blue colour appeared | Present |
| c) Liebermann’s reaction | Blue Colour appeared | Present |

4 **Tests for Flavonoids:**

| a) Shinoda test | Pink colour observed | Present |
| b) Lead acetate | Yellow coloured Ppt. | Present |
| c) Sodium hydroxide | Discoloration | Present |
| d) Ferric chloride test | Intense green colour | Present |
5 **Tests for glycosides:**
A. Tests for cardiac glycosides
   a) Baljet's test
   b) Legal's test
   c) Kellar-killiani test
   d) Libermann's test
B. Test for Anthraquinone glycoside:
   a) Bontrager’s test
   b) Modified Bontrager’s test
C. Tests for Saponin glycosides
   a) Foam test
   b) Hemolytic test
D. Tests for Coumarin glycosides
   a) No orange Colour
   b) No Pink to red colour
   c) No reddish brown colour
   d) No blue colour colour

6 **Tests for amino acids:**
   a) Ninhydrin test
   b) Test for Tyrosine
   - No purple colour observed
   - No red colour observed

7 **Tests for Alkaloids:**
   a) Dragendorff’s reagent
   b) Mayer's reagent
   c) Wagner’s Reagent
   d) Hager’s reagent
   - Orange precipitate
   - Yellow precipitate

8 **Tests for Tannins & phenolic compounds:**
   a) 5% Fecl₃ solution
   b) Lead acetate solution
   c) Gelatin solution
   d) Bromine water
   e) Acetic acid solution
   - Deep blue colour
   - White precipitate
   - White precipitate
   - Discoloration
   - Red colour
<table>
<thead>
<tr>
<th>Tests for carbohydrates:</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molish's test (general test)</td>
<td>No violet ring observed</td>
<td>Absent</td>
</tr>
<tr>
<td>A. For reducing sugars</td>
<td>No brick red colour ppt.</td>
<td>Absent</td>
</tr>
<tr>
<td>a) Fehling's test</td>
<td>No green colour appears</td>
<td>Absent</td>
</tr>
<tr>
<td>b) Benedict's test</td>
<td>No Red precipitate</td>
<td>Absent</td>
</tr>
<tr>
<td>B. Tests for Monosaccharides:</td>
<td>No Blue or green colour</td>
<td>Absent</td>
</tr>
<tr>
<td>a) Barfoed's test</td>
<td>No Ppt</td>
<td>Absent</td>
</tr>
<tr>
<td>C. Tests for Hexose sugars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Tests for Non-reducing sugars:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tannic acid test for starch</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5(b): Proximate chemical analysis of aqueous extract of *Caralluma adscendens*.
<table>
<thead>
<tr>
<th></th>
<th>Tests for steroid:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Salkowski reaction</td>
<td>Red colour appeared</td>
<td>Present</td>
</tr>
<tr>
<td>b)</td>
<td>Liebermann-Burchard</td>
<td>Blue colour appeared</td>
<td>Present</td>
</tr>
<tr>
<td>c)</td>
<td>Liebermann’s reaction</td>
<td>Blue Colour appeared</td>
<td>Present</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tests for Flavonoids:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Shinoda test</td>
<td>Pink colour observed</td>
<td>Present</td>
</tr>
<tr>
<td>b)</td>
<td>Lead acetate</td>
<td>Yellow coloured Ppt.</td>
<td>Present</td>
</tr>
<tr>
<td>c)</td>
<td>Sodium hydroxide</td>
<td>Discoloration</td>
<td>Present</td>
</tr>
<tr>
<td>d)</td>
<td>Ferric chloride test</td>
<td>Intense green colour</td>
<td>Present</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tests for glycosides:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Tests for cardiac glycosides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Baljet's test</td>
<td>No orange Colour</td>
<td>Absent</td>
</tr>
<tr>
<td>b)</td>
<td>Legal's test</td>
<td>No Pink to red colour</td>
<td>Absent</td>
</tr>
<tr>
<td>c)</td>
<td>Kellar-killiani test</td>
<td>No reddish brown colour</td>
<td>Absent</td>
</tr>
<tr>
<td>d)</td>
<td>Libermann's test</td>
<td>No blue colour colour</td>
<td>Absent</td>
</tr>
<tr>
<td>B.</td>
<td>Test for Anthraquinone glycoside:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Bontrager’s test</td>
<td>No pink or red colour</td>
<td>Absent</td>
</tr>
<tr>
<td>b)</td>
<td>Modified Bontrager’s test</td>
<td>No pink or red colour</td>
<td>Absent</td>
</tr>
<tr>
<td>C.</td>
<td>Tests for Saponin glycosides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Foam test</td>
<td>Foam formed</td>
<td>Present</td>
</tr>
<tr>
<td>b)</td>
<td>Hemolytic test</td>
<td>Hemolytic zone observed</td>
<td>Present</td>
</tr>
<tr>
<td>D.</td>
<td>Tests for Coumarin glycosides</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No Green fluorescence</td>
<td>Absent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tests for amino acids:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Ninhydrin test</td>
<td>No purple colour observed</td>
<td>Absent</td>
</tr>
<tr>
<td>b)</td>
<td>Test for Tyrosine</td>
<td>No red colour observed</td>
<td>Absent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tests for Alkaloids:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Dragendroff’s reagent</td>
<td>Orange precipitate</td>
<td>Present</td>
</tr>
<tr>
<td>b)</td>
<td>Mayer's reagent</td>
<td>Cream Precipitate</td>
<td>Present</td>
</tr>
<tr>
<td>Tests for Tannins &amp; phenolic compounds:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| a) 5% FeCl₃ solution                   | Deep blue colour  
| b) Lead acetate solution               | White precipitate  
| c) Gelatin solution                    | White precipitate  
| d) Bromine water                       | Discoloration      
| e) Acetic acid solution                | Red colour         
| f) Potassium dichromate                | Red precipitate    
| g) Dilute Iodine solution              | Transient red colour  
| h) Dilute HNO₃                         | Reddish yellow colour  
| c) Wagner’s Reagent                    | Brown precipitate  
| d) Hager’s reagent                     | Yellow precipitate |
5.6 Spectral Data of *Actiniopteris radiata*:

The IR data showes (O-H strech ) -3391, (C-H Strech)- 2930, (C=O Ketone strech)- 1638, (C-H bending)- 1424, (O-H Primary alcohol)- 1052, (C=C Alkene mono substitute)- 991,921.and NMR spectra shows (c=o ketone )- s2.5d, (c=o ketone )-s2.5d, (NO$_2$ alkane)-d 4.5, (CH$_3$ -OH) - s3.4 , (C=C alkane)- s5.2,where as the results of micro analysis showed the presence of N-6.92 ,C-45.87 ,S-0.544, H- 4.43and O - 40.97.

The isolated compound subjected for various spectral analysis. The details of IR, NMR, Mass and GCMS Spectra along with elemental analysis reported in table 6-8.

M.P. and Rf values of isolated compound *Actiniopteris radiata* was found to be 179-180°C and 0.5 respectively.

Table 6 : Report of elemental analysis.

![Table 6](image-url)
Table 7: Some selected IR frequencies of *A. radiata*.

<table>
<thead>
<tr>
<th>Functional groups</th>
<th>Frequencies (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(O-H strech)</td>
<td>3391</td>
</tr>
<tr>
<td>(C-H Strech)</td>
<td>2930</td>
</tr>
<tr>
<td>(C=O Ketone strech)</td>
<td>1638</td>
</tr>
<tr>
<td>(C-H bending)</td>
<td>1424</td>
</tr>
<tr>
<td>(O-H Primary alcohol)</td>
<td>1052</td>
</tr>
<tr>
<td>(C=C Alkene mono substitute)</td>
<td>991, 921</td>
</tr>
</tbody>
</table>
Table 8: Some selected NMR spectral data of A.radiata.

<table>
<thead>
<tr>
<th>Functional groups</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(c=o ketone)</td>
<td>s2.5</td>
</tr>
<tr>
<td>(NO₂⋅alkane),</td>
<td>d4.5</td>
</tr>
<tr>
<td>(CH₃⋅OH),</td>
<td>s3.4</td>
</tr>
<tr>
<td>(C=C alkane),</td>
<td>s5.2</td>
</tr>
</tbody>
</table>
5.7 Acute toxicity study of the extracts:

The rats treated with 300, 1000 and 2000mg/kg orally exhibited normal behavior, i.e. they were alert, with normal grooming, touch response and pain response. There was no sign of passivity and secretary signs were also normal. No mortality was reported for any dose (Table 9).

Table 9: Behavioral changes monitored during the study.

<table>
<thead>
<tr>
<th>Signs / behavioral change</th>
<th>Observation</th>
<th>Signs / behavioral change</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased motor activity</td>
<td>Absent</td>
<td>Ataxia</td>
<td>Absent</td>
</tr>
<tr>
<td>Tremors</td>
<td>Absent</td>
<td>Sedation</td>
<td>Absent</td>
</tr>
<tr>
<td>Clonic convulsions</td>
<td>Absent</td>
<td>Muscle relaxation</td>
<td>Absent</td>
</tr>
<tr>
<td>Tonic extension</td>
<td>Absent</td>
<td>Hypnosis</td>
<td>Absent</td>
</tr>
<tr>
<td>Straub reaction</td>
<td>Absent</td>
<td>Analgesia</td>
<td>Absent</td>
</tr>
<tr>
<td>Pilo-erection</td>
<td>Absent</td>
<td>Anesthesia</td>
<td>Absent</td>
</tr>
<tr>
<td>Muscle spasm</td>
<td>Absent</td>
<td>Lacrimation</td>
<td>Absent</td>
</tr>
<tr>
<td>Writhing</td>
<td>Absent</td>
<td>Salivation</td>
<td>Absent</td>
</tr>
<tr>
<td>Arching and rolling</td>
<td>Absent</td>
<td>Diarrhea</td>
<td>Absent</td>
</tr>
<tr>
<td>Catatonia</td>
<td>Absent</td>
<td>Respiration</td>
<td>Absent</td>
</tr>
<tr>
<td>Spasticity</td>
<td>Absent</td>
<td>Skin colour</td>
<td>No change</td>
</tr>
<tr>
<td>Hyperthesia</td>
<td>Absent</td>
<td>Loss of righting reflex</td>
<td>Absent</td>
</tr>
</tbody>
</table>
5.8 Pharmacological Screening:

The aqueous and ethanolic extract of both plants at various dose are studied for various pharmacological screening and results reported in table 10-15.

5.8.1 Analgesic activity:

Aqueous extract (300 mg/kg) and Ethanol extract (300 mg/kg) of *Actiniopteris radiata* and aqueous (250 & 500 mg / kg) and ethanolic (250 & 500 mg / kg) of *Caralluma adscendens* extract shows a significant dose dependant reduction in the number of writhing response. Maximum and Potent inhibition was observed in the aqueous extract and ethanolic extract at the dose of 300 mg/kg of *Actiniopteris radiata* and 500 mg / kg , 250mg/kg of *Caralluma adscendens* by Acetic acid writhing method but it showed non significant change in the tail flick latency till 120 minutes.

The ethanolic and aqueous extract of plant were studied for analgesic activity and reported in table 10-13 and graph 1-4.
Table 10: Effect of Ethanolic and aqueous extract of *Actiniopteris radiata* in mice by Acetic acid induced writhing response.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose (mg/kg)</th>
<th>Mean Writhing + SEM *</th>
<th>Percentage Inhibition of Writhing Reflex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>10 ml/kg</td>
<td>42.33 ± 2.58</td>
<td>-</td>
</tr>
<tr>
<td>Aqueous extract</td>
<td>300 mg/kg</td>
<td>0.00 a †</td>
<td>100</td>
</tr>
<tr>
<td>Ethanolic extract</td>
<td>300 mg/kg</td>
<td>2.67 ± 1.51 e †</td>
<td>95.24</td>
</tr>
<tr>
<td>Pentazocine</td>
<td>5 mg/kg</td>
<td>0.00 § †</td>
<td>100</td>
</tr>
</tbody>
</table>

* Indicates mean of six animals; S.D.: Standard deviation; a p value compared to compared to control (p < 0.001); e p value compared to compared to control (p < 0.001); § p value compared to Control (p < 0.001), † p value compared with each group (p > 0.05) i.e. not significant.

Graph No: 1 Effect of Ethanolic and aqueous extract of *Actiniopteris radiata* in mice by Acetic acid induced writhing response.
Table 11: Effects of Aqueous and Ethanolic leaf extract of *Actiniopteris radiata* in mice by Tail Immersion Method

<table>
<thead>
<tr>
<th>Group</th>
<th>30 min*</th>
<th>60 min*</th>
<th>90 min*</th>
<th>120 min*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>4.67 ± 0.82</td>
<td>4.83 ± 0.75</td>
<td>5.17 ± 0.99</td>
<td>5.17 ± 0.75 §</td>
</tr>
<tr>
<td>Aqueous</td>
<td>7.5 ± 1.38 †</td>
<td>7.17 ± 1.17 †</td>
<td>8.33 ± 0.52 ‡ ≠</td>
<td>6.67 ± 0.82 §</td>
</tr>
<tr>
<td>Ethanolic</td>
<td>7.67 ± 1.36 †</td>
<td>7.67 ± 1.37 †</td>
<td>5.67 ± 0.82 Ψ</td>
<td>6.00 ± 1.41 §</td>
</tr>
<tr>
<td>Standard</td>
<td>8.00 ± 0.89 a</td>
<td>11.67 ± 1.03 b</td>
<td>11.17 ±1.17 b</td>
<td>5.5 ± 1.05 §</td>
</tr>
</tbody>
</table>

* Indicates mean of six animals; S.D.: Standard deviation; †: p value compared to control (p < 0.01); ‡: p value compared to control (p < 0.001); Ψ p value compared to control (p > 0.05) i.e. not significant; a p value compared to Aqueous Extract and Ethanolic Extract (p > 0.05) i.e. not significant; b p value compared to Aqueous Extract and Ethanolic Extract (p < 0.001); § p value compared to ethanolic extract (p < 0.001); ≠ p value compared with each group (p > 0.05) i.e. not significant.

**Graph: 2** Effects of Aqueous and Ethanolic leaf extract of *Actiniopteris radiata* in mice by Tail Immersion method.
Table 12: Analgesic activity of *Caralluma adscendens* by acetic acid induced writhing method.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose (mg/kg)</th>
<th>Mean Writhing ± SEM *</th>
<th>Percentage Inhibition of Writhing Reflex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>10 ml/kg</td>
<td>39.5 ± 3.45</td>
<td>-</td>
</tr>
<tr>
<td>Aqueous extract</td>
<td>250 mg/kg</td>
<td>24.33 ± 3.26&lt;sup&gt;a&lt;/sup&gt;</td>
<td>38.40&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Aqueous extract</td>
<td>500 mg/kg</td>
<td>0.00&lt;sup&gt;a&lt;/sup&gt;</td>
<td>100&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ethanolic extract</td>
<td>250 mg/kg</td>
<td>0.00&lt;sup&gt;a&lt;/sup&gt;</td>
<td>100&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ethanolic extract</td>
<td>500 mg/kg</td>
<td>0.00&lt;sup&gt;a&lt;/sup&gt;</td>
<td>100&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Pentazocine</td>
<td>5 mg/kg</td>
<td>0.00</td>
<td>100</td>
</tr>
</tbody>
</table>

* Indicates mean of six animals; S.D.: Standard deviation;<sup>a</sup> p value compared to compared to control (p < 0.001).

Graph 3: Analgesic activity of *Caralluma adscendens* by acetic acid induced writhing method.
Table 13: Effects of Aqueous and Ethanolic extract of *Caralluma adscendens* in mice by Tail Immersion Method.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose (mg/kg)</th>
<th>30 min</th>
<th>60 min</th>
<th>90 min</th>
<th>120 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>10</td>
<td>4.83 ± 0.75</td>
<td>4.5 ± 0.84</td>
<td>3.83 ± 0.75</td>
<td>4.33 ± 0.82</td>
</tr>
<tr>
<td>Aqueous</td>
<td>250</td>
<td>5.67 ± 0.52Ψ</td>
<td>9.67 ± 0.52Ψ</td>
<td>7.17 ± 0.41Ψ</td>
<td>5.00 ± 0.00§</td>
</tr>
<tr>
<td>Aqueous</td>
<td>500</td>
<td>8.67 ± 0.52Ψ</td>
<td>9.67 ± 0.52Ψ</td>
<td>8.17 ± 0.41Ψ</td>
<td>4.67 ± 1.03§</td>
</tr>
<tr>
<td>Ethanolic</td>
<td>250</td>
<td>8.17 ± 0.41Ψ</td>
<td>9.33 ± 0.52Ψ</td>
<td>6.5 ± 0.55Ψ</td>
<td>5.67 ± 0.52†</td>
</tr>
<tr>
<td>Standard</td>
<td>5</td>
<td>8.17 ± 0.40Ψ</td>
<td>9.5 ± 0.50Ψ</td>
<td>9.33 ± 0.82Ψ</td>
<td>6.5 ± 0.50Ψ</td>
</tr>
</tbody>
</table>

* Indicates mean of six animals; S.D.: Standard deviation; Ψ p value compared to control (p < 0.001) i.e. significant; † p value compared to control (p < 0.01); § p value compared with each group (p > 0.05) i.e. not significant.

Graph 4: Effects of Aqueous and Ethanolic extract of *Caralluma adscendens* in mice by Tail Immersion Method.
5.8.2 Anti inflammatory activity:

The aqueous and ethanolic extracts of *Acteniopetris radiate* at dose of 300mg/kg was found to reduce edema in hind paw significantly (p< 0.001 ) by carrageenan induced rat paw edema. The percentage inhibition of edema (38.32) and (24.33) was observed with aqueous and ethanolic extracts respectively after after 5 hr.as compaired to standard indomethacin (41.32 %) at dose of 10 mg/kg.

The ethanolic and aqueous extracts of *Caralluma adscendens* at the dose 250 mg/kg was found to reduce edema in left hind rat paw significantly (p< 0.001) at 0, 30, 60, 120, 180 and 240 min. which was comparable to standard. The maximum inhibition was shown by the whole plant ethanolic and aqueous extract after 4 hrs 32% and 46% respectively, where as the standard drug showed 47% of inhibition.

The anti-inflammatory activity of etanolic and aqueous extract of Actiniopteris radiata and *Caralluma adscendens* was studied by carrageenan induced rat hind paw edema method and reported in table 14 and 15.
Table 14: Effect of aqueous and ethanolic extracts of Actiniopteris radiata on carrageenan induced rat hind paw edema.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose</th>
<th>Mean paw edema volume (ml ± SEM)</th>
<th>% inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 hours</td>
<td>3 hours</td>
</tr>
<tr>
<td>Control 0.5 % w/v CMC</td>
<td>2ml/kg</td>
<td>1.09 ± 0.028</td>
<td>1.57 ± 0.45</td>
</tr>
<tr>
<td>Indomethacin 10 mg/kg</td>
<td>10 mg/kg</td>
<td>1.077 ± 0.023</td>
<td>1.027 ± 0.09</td>
</tr>
<tr>
<td>Aqueous extract 300 mg/kg</td>
<td>300 mg/kg</td>
<td>1.14 ± 0.02</td>
<td>1.067 ± 0.016</td>
</tr>
<tr>
<td>Ethanolic extract 300 mg/kg</td>
<td>300 mg/kg</td>
<td>1.09 ± 0.020</td>
<td>1.15 ± 0.02</td>
</tr>
</tbody>
</table>

* Indicates p<0.001, results are expressed as mean ± SEM from six animals
Indicates mean of six animals; S. D. Standard deviation; ψ p value compared to control (p < 0.001) i.e. significant; †: p value compared to control (p < 0.05)

Graph 5: Effect of aqueous and ethanolic extracts of Actiniopteris radiata on carrageenan induced rat hind paw edema.
Table 15: Effect of aqueous and ethanolic extracts of *Caralluma adscendens* on carrageenan induced rat hind paw edema.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose (mg/kg)</th>
<th>Left hind paw volume (mean±S.D) (ml)</th>
<th>0.5 hr</th>
<th>1 hr</th>
<th>2 hr</th>
<th>3 hr</th>
<th>4 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td>1.68</td>
<td>1.64</td>
<td>1.69</td>
<td>1.94</td>
<td>2.1</td>
</tr>
<tr>
<td>Aqueous Extract</td>
<td>250</td>
<td></td>
<td>1.25 ± 0.09ψ</td>
<td>1.13 ± 0.08ψ</td>
<td>1.06 ± 0.04ψ</td>
<td>1.02 ± 0.06ψ</td>
<td>1.12 ± 0.05ψ (46%)</td>
</tr>
<tr>
<td>Ethanolic Extract</td>
<td>250</td>
<td></td>
<td>1.56 ±0.07ψ</td>
<td>1.50 ±0.10ψ</td>
<td>1.40 ±0.05†</td>
<td>1.38 ±0.08ψ</td>
<td>1.42 ±0.05ψ (32%)</td>
</tr>
<tr>
<td>Diclofenac Sodium</td>
<td>10</td>
<td></td>
<td>1.34 ±0.05ψ</td>
<td>1.59 ±0.12ψ</td>
<td>1.37 ±0.06†</td>
<td>1.22 ±0.04ψ</td>
<td>1.1 ± 0.03ψ (47%)</td>
</tr>
</tbody>
</table>

*Indicates mean of six animals; S. D. Standard deviation; ψ p value compared to control (p < 0.001) i.e. significant; †: p value compared to control (p < 0.05)

Graph 6: Effect of aqueous and ethanolic extracts of *Caralluma adscendens* on carrageenan induced rat hind paw edema.
5.8.3 Anti Microbial Activity:

All the extract obtained by successive solvent extraction method were studied for their antimicrobial and anti fungal activity in different concentrations. The ethanolic extract at conc. of 150 and 300 mg and aqueous extract at conc. of 300 mg shown antibacterial activity against *S. typhi* and *E.coli* and there is no antibacterial activity against other gram (+) and gram(-) organisms. The activity was comparable to that of chloramphenicol as a standard. The petroleum, chloropharm, benzene and acetone extracts did not show antibacterial activity.

All extracts were found to be inactive against *Candida albicans*, *Aspergillus niger* and *Mucor* compared with Griseofulvin.

The antibacterial activity of aqueous and ethanol extract of *Actiniopteris radiata* and *Caralluma adscendense* was screened using cup plate method. Inoculums was prepared and the zone diameter was measured and presented in table 16 and17.
Table 16: Anti-bacterial activity of various extracts of Actiniopteris radiata in mg/ml

<table>
<thead>
<tr>
<th>Test Microorganisms</th>
<th>Zone of inhibition (mm)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pet.ether</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------</td>
</tr>
<tr>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Shigella</td>
<td></td>
</tr>
<tr>
<td>salmonella typhi</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>-</td>
</tr>
<tr>
<td>Vibrio cholerae</td>
<td>-</td>
</tr>
<tr>
<td>bacillus subtilis</td>
<td>-</td>
</tr>
<tr>
<td>klebsiella pneumoniae</td>
<td>-</td>
</tr>
<tr>
<td>Proteus vulgaris</td>
<td>-</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>-</td>
</tr>
</tbody>
</table>

- Indicates no zone of inhibition, *Average of three readings
Table 17: Antibacterial activity of various extracts of *Caralluma adscendens* in mg/ml.

<table>
<thead>
<tr>
<th>Test Microorganisms</th>
<th>Zone of inhibition (mm)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethanol</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>10</td>
</tr>
<tr>
<td><em>salmonella typhi</em></td>
<td>7</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>10</td>
</tr>
<tr>
<td><em>Proteus vulgaris</em></td>
<td>5</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>-</td>
</tr>
</tbody>
</table>

- Indicates no zone of inhibition * Average of three reading
Photo-8: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *E.coli*.

Photo-9: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *Shigella*. 
Photo-10: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *Salmonella typhi*.

Photo-11: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *Pseudomonas aeruginosa*. 
Photo-12: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *vibrio cholerae*.

Photo-13: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *Bacillus subtilis*. 

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Photo-14 : Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *klebsiella pnemoniae*.

Photo-15 : Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *Proteus vulgaris*.
Photo-16: Antibacterial activity of aqueous and ethanolic extract of *a.radiata* using *Proteus vulgaris*

Photo-17: Control
Photo-18: Antibacterial activity of aqueous and ethanolic extract of *Caralluma adscendens* using *S.typhi*.

Photo-19: Antibacterial activity of aqueous and ethanolic extract of *Caralluma adscendens* using *s.aureus*.
Photo-20: Antibacterial activity of aqueous and ethanolic extract of *Caralluma adscendens* using *Proteus vulgaris*.

Photo-21: Antibacterial activity of aqueous and ethanolic extract of *Caralluma adscendens* using *E.coli*.
5.8.4 Antifungal activity:

The extract were subjected to anti fungal screening. The observed zone of inhibition are presented in table 18 and 19.

Table 18: Antifungal activity of ethanolic and aqueous extracts of *Actiniopteris radiata* in mg/ml.

<table>
<thead>
<tr>
<th>Test Microorganisms</th>
<th>Zone of inhibition (mm)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethanol</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
<tr>
<td><em>Candida albicans</em></td>
<td>-</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>-</td>
</tr>
<tr>
<td><em>Mucor</em></td>
<td>-</td>
</tr>
</tbody>
</table>

- Indicates no zone of inhibition, *Average of three readings

Table 19: Antifungal activity of ethanolic and aqueous extracts of *Caralluma adscendens* in mg/ml.

<table>
<thead>
<tr>
<th>Test Microorganisms</th>
<th>Zone of inhibition (mm)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ethanol</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
<tr>
<td><em>Candida albicans</em></td>
<td>-</td>
</tr>
<tr>
<td><em>Aspergillus niger</em></td>
<td>-</td>
</tr>
<tr>
<td><em>Mucor</em></td>
<td>-</td>
</tr>
</tbody>
</table>

- Indicates no zone of inhibition, *Average of three readings