1. **Terminalia bellirica** (Gaertn.) Roxb.

Leaf showed presence of simple, unicellular, Combretaceous trichomes with bulbous base, average length, ca 138.2 µm and range 27.0 – 300.9 µm, present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 20.48 µm in average and range 15.3 – 24.9 µm. The average size of guard cell, 27.86 × 6.3 µm and range 23.5 – 31.2 × 4.7 – 7.8 µm.

Upper epidermal cells slightly larger (the average cell size 55.46 × 40.86 µm and range 45 – 73.3 × 31 – 51.1 µm) than lower epidermal cells (the average cell size 47 × 40.5 µm and range 42.5 – 67.5 × 25 – 47.5 µm). Upper epidermal cells less wavy than lower epidermal cells. Both the cells irregular in shape (Plate-25, Table-2).

2. **Terminalia bialata** (Roxb.) Steud.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca 297.23 µm and range 122.1 to 709.2 µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 16.4 µm in average and range 14.8 to 19.3 µm. The average size of guard cell, ca 22.97 × 6.82 µm and range in between 17.8 – 25 × 14.8 – 19.3 µm.

Upper epidermal cells slightly larger (the average cell size 78.6 × 46.83 µm and range 63.3 – 92 × 31.4 – 53.4 µm) than lower epidermal cells (the average cell size 42.81 × 29.35 µm and range 28.9 – 64.3 × 35.8 – 15.9 µm). Both the epidermal cells irregular and wavy in outline with irregular shape (Plate-25, Table-2).
3) **Terminalia catappa** L.

Leaf showed presence of simple, unicellular, Combretaceous, long and short trichomes, with bulbous base. Long trichomes, ca 475.24 µm in average and range 109.6 to 883.1 µm. Short trichomes, ca 75.67 µm in average and range 85.4 to 60.4 µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 18.92 µm in average and range 24.9 to 15.4 µm. The average size of guard cell, ca 23.79 × 5.1 µm and range 17.7 – 29.7 × 3.7 – 6.9 µm.

Upper epidermal cells slightly larger (the average cell size 45.23 × 32.76 µm and range 32.3 – 56.2 × 18.2 – 40.3 µm) than lower epidermal cells (the average cell size 43.3 × 23.35 µm and range 30.47 – 57.77 × 14.9 – 38.79 µm). Upper epidermal cells are more wavy in outline as compared to lower epidermal cells, both the cells irregular in shape (Plate-26, Table-2).

4) **Terminalia chebula** Retz.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca 749.22 µm and range 154.3 to 1120.3 µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 12.96 µm in average and range 10.2 to 19 µm. The average size of guard cell, ca 22.91 × 6 µm and range 20.1 – 26.9 × 4.6 – 7.4 µm.

Upper epidermal cells slightly larger (the average cell size 38.78 × 17.95 µm and range 27.6 – 52.7 × 23.6 – 36.2 µm) than lower epidermal cells (the average cell size 27.73 × 18.15 µm and range 20.3 – 38.9 × 14.8 – 21.8 µm).
Upper epidermal cells wavy in outline than lower epidermal cells, both the cells irregular in shape (Plate- 26, Table- 2).

5) **Terminalia citrina** Roxb. ex Flem.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca 289.16 µm and range 120 to 530 µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 19.69µm in average and range 15.2 to 25µm. The average size of guard cell, ca 20.58 × 6.87 µm and range in between 20 – 28.1 × 5.7 – 8 µm.

Upper epidermal cells slightly larger (the average cell size 44.09 × 28.41 µm and range 30 – 60 × 20 – 35 µm) than lower epidermal cells (the average cell size 43.21 × 26.79 µm and range 30 – 57.5 × 17.5 – 35 µm). Upper epidermal cells wavy in outline than lower epidermal cells, both the cells irregular (Plate- 27, Table- 2).

6) **Terminalia cuneata** Roth.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca 693.5 µm and range 228 to 1235 µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 14.41µm in average and range 10.3 to 18.1µm. The average size of guard cell, ca 26.62 × 8.79 µm and range in between 18.75 – 48.75 × 7.5 – 11.25 µm.

Upper epidermal cells slightly larger (the average cell size 41.59 × 26.77 µm and range 25 – 55 × 15 – 45 µm) than lower epidermal cells (the average cell
size $37 \times 22.5 \, \mu m$ and range $27.5 - 42.5 \times 10 - 37.5 \, \mu m$). Both epidermal cells irregular (Plate- 27, Table- 2).

7) **Terminalia elliptica** Willd.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca $540.80 \, \mu m$ and range 90.6 to 900.3 \, \mu m. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca $16.98 \, \mu m$ in average and range 13 to 20.9 \, \mu m. The average size of guard cell, ca $25.95 \times 6.27 \, \mu m$ and range $23.2 - 29.2 \times 5.3 - 6.9 \, \mu m$.

Upper epidermal cells slightly larger (the average cell size $60.28 \times 43.12 \, \mu m$ and range $49.8 - 83.3 \times 33.1 - 52.4 \, \mu m$) than lower epidermal cells (the average cell size $36.59 \times 22.2 \, \mu m$ and range $18.6 - 57.9 \times 15 - 34.3 \, \mu m$). Epidermal cells are wavy in outline with irregular shape (Plate- 28, Table- 2).

8) **Terminalia myriocarpa** Heurck & Muell.-Arg.

Leaf showed presence of simple, unicellular, Combretaceous, long and short trichomes, with bulbous base. Long trichomes, ca $241.04 \, \mu m$ in average and range 129.3 to 305 \, \mu m. Shorter trichomes, ca $102.8 \mu m$ in average and range 37.7 to 215.3 \, \mu m. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca $17.82 \, \mu m$ in average and range 15.8 to 20.1 \, \mu m. The average size of guard cell, ca $25.12 \times 6.56 \, \mu m$ and range in between $21.6 - 28.2 \times 5.8 - 7.3 \, \mu m$.

Upper epidermal cells squarish to rectangular or irregular in shape and slightly larger (the average cell size $37.69 \times 22.45 \, \mu m$ and range $24.7 - 48.4 \times$
16.5 – 28.5 µm) than lower epidermal cells (the average cell size 116.33 × 50.55 µm and range 61.9 – 156 × 35.4 – 63.8 µm) (Plate- 28, Table- 2).

9) **Terminalia pallida** Brandis

The leaves glabrous. Stomata anomocytic (Ranunculaceous), amphistomatic, pore length, ca 16.51 µm in average and range 13.8 to 20.2 µm. The average size of guard cell, ca 27.2 × 6.01 µm and range 23.3 – 30.2 × 4.7 – 7 µm for upper epidermis. Average stoma length 16.59 µm and range 13.8 to 20.2 µm. The average size of guard cell, ca 28.04 × 5.82 µm and range 22.1 – 32.9 × 5.4 – 7.1 µm for lower epidermis.

Upper epidermal cells slightly larger (the average cell size 44.54 × 30.16 µm and range 27.6 – 56.3 × 17.4 – 36.9 µm) than lower epidermal cells (the average cell size 39.89 × 28.43 µm and range 30.2 – 53.4 × 19.6 – 39.4 µm). Both the epidermal cells irregular shape (Plate- 29, Table- 2).

10) **Terminalia paniculata** Roth.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca 299.84 µm and range 90.6 to 603.8 µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Lower epidermis papillose with cuticular striations. Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 18.17 µm in average and range 15.6 to 22.2 µm. The average size of guard cell, ca 23.53 × 5.62 µm and range in between 19.1 – 23.9 × 4.3 – 6.7 µm.

Epidermal cells irregular, upper epidermal cells slightly larger (the average cell size 73.77 × 48.89 µm and range 56.1 – 89.3 × 37.3 – 62.1 µm) than lower epidermal cells (the average cell size 37.19 × 21.85 µm and range 20.8 – 22 × 13 –
34.2 µm). Upper epidermal cells wavy in outline than lower epidermal cells (Plate-29, Table-2).

11) Terminalia procera Roxb.

Leaf showed presence of simple, unicellular Combretaceous trichomes, with bulbous base, average length, ca 216.38µm and range 62.4 to 381µm. Trichomes present on both the surfaces, but however, they are more common on lower surface.

Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 74.1µm in average and range 59.4 to 87.1µm. The average size of guard cell, ca 22.26 × 6.46 µm and range in between 19.2 – 28.1 × 5.5 – 7.8 µm.

Upper epidermal cells slightly larger (the average cell size 69.69 × 29.14 µm and range 31.6 – 93.7 × 25.2 – 40.4 µm) than lower epidermal cells (the average cell size 398.3 × 197.4 µm and range 27.1 – 54.5 × 14.8 – 33.8 µm). Lower epidermal cells wavy in outline as compared to upper epidermal cells, both the cells irregular (Plate-30, Table-2).

12) Terminalia travancorensis Wight & Arn.

The leaves glabrous. Stomata anomocytic (Ranunculaceous), hypostomatic, pore length, ca 13.49 µm in average and range 12.1 to 15.6µm. The average size of guard cell, ca 20.63 × 5.56 µm and range 13.8 – 24.1 × 3.9 – 6.8 µm.

Upper epidermal cells slightly larger (the average cell size 37.16 × 22.8 µm and range 22.3 – 47.6 × 17.6 – 37.8 µm) than lower epidermal cells (the average cell size 36.52 × 24.41 µm and range 22.7 – 56.4 × 20.5 – 28.1 µm). Epidermal cells irregular in outline (Plate-30, Table-2).
LEAF CONSTANTS / QUANTITATIVE ANALYSIS

Quantitative microscopic analysis of leaf includes parameters like stomatal number, stomatal index, palisade ratio, vein islet number, veinlet termination number (Datta & Mukerji, 1952; Trease & Evans, 1982; Kokate & al., 1996 & Najat, 2006).

1. **Terminalia bellirica** (Gaertn.) Roxb.
   
   Average stomatal number for lower epidermis 17.5 and range 13 – 23. Stomatal index for lower epidermis in average 23.72 and range 16.87 – 33.33. Palisade ratio in average 5.35 and range 4.25 – 6. Vein islet number in average 7.6 and range 6 – 9. Veinlet termination number in average 29 and range 25 – 36 (Plate- 25, Table- 3).

2. **Terminalia bialata** (Roxb.) Steud.


3. **Terminalia catappa** L.

   Stomatal number for lower epidermis in average 16.9 and range 11 – 22. Stomatal index for lower epidermis in average 17.17 and range 12.35 – 24.44. Palisade ratio in average 6.68 and range 6 – 7.25. Vein islet number in average 03 and range 2 – 4. Veinlet termination number in average 10.2 and range 8 – 12 (Plate- 26, Table- 3).
4. **Terminalia chebula** Retz.

Mean stomatal number for lower epidermis 14.9 and range 9 – 20. Stomatal index for lower epidermis in average 10.40 and range 7.14 – 12.99. Palisade ratio in average 6.75 and range 4.5 – 8.5. Vein islet number in average 10.2 and range 8 – 12. Veinlet termination number in average 12.4 and range 8 – 14 (Plate- 26, Table- 3).

5. **Terminalia citrina** Roxb. ex Flem.

Average stomatal number for lower epidermis 24 and range 20 – 60. Stomatal index for lower epidermis in average 34.83 and range 25 – 75. Palisade ratio in average 5.75 and range 4.5 – 7.5. Vein islet number in average 9.2 and range 7 – 12. Veinlet termination number in average 14.6 and range 9 – 14 (Plate- 27, Table- 3).

6. **Terminalia cuneata** Roth.

Stomatal number for lower epidermis in average 28 and range 20 – 60. Stomatal index for lower epidermis in average 24.42 and range 12.5 – 50. Palisade ratio in average 5.48 and range 3.75 – 6.5. Vein islet number in average 3.9 and range 3 – 5. Veinlet termination number average 7.9 and range 5 – 12 (Plate- 27, Table- 3).

7. **Terminalia elliptica** Willd.

8. **Terminalia myriocarpa** Van Heurck & Mull.-Arg.

Stomatal number for lower epidermis mean 41 and range 25 – 47. Stomatal index for lower epidermis in average 79.78 and range 74.72 – 88.15. Palisade ratio in average 11.68 and range 3.5 – 6. Vein islet number average 4.3 and range 3 – 6. Veinlet termination number average 7.4 and range 4 – 11 (Plate- 28, Table- 3).

9. **Terminalia pallida** Brandis

Average stomatal number upper epidermis 8 and range 1 – 3. Stomatal index for upper epidermis in average 2.87 and range 1.23 – 4.55. Stomatal number for lower epidermis in average 6.3 and range 3 – 10. Stomatal index for lower epidermis in average 8.67 and range 3.95 – 15.38. Palisade ratio in average 5.43 and range 3.75 – 7.5. Vein islet number in average 3.6 and range 3 – 5. Veinlet termination number average 13.11 and range 9 – 16 (Plate- 29, Table- 3).

10. **Terminalia paniculata** Roth.

Stomatal number for lower epidermis average 21.8 and range 9 – 38. Stomatal index for lower epidermis in average 27.91 and range 16.67 – 40.42. Palisade ratio in average 6.9 and range 5.75 – 8.75. Vein islet number average 5.6 and range 4 – 7. Veinlet termination number average 6.5 and range 4 – 9 (Plate- 29, Table- 3).

11. **Terminalia procera** Roxb.

Stomatal number for lower epidermis average 28.7 and range 19 – 35. Stomatal index for lower epidermis average 20.82 and range 16.52 – 26.32. Palisade ratio in average 4.37 and range 3 – 5.25. Vein islet number in average 4.6 and range 3 – 8. Veinlet termination number in average 17.9 and range 14 – 25 (Plate- 30, Table- 3).
12. **Terminalia travancorensis** Wight & Arn.

Stomatal number for lower epidermis average 15 and range 10 – 23. Stomatal index for lower epidermis average 10.12 and range 0.75 – 16.43. Palisade ratio in average 10.4 and range 8.75 – 13. Vein islet number average 7.3 and range 6 – 10. Veinlet termination number average 5.5 and range 4 – 7 (Plate-30, Table-3).
Table 2. DERMATOLOGICAL PARAMETERS

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<thead>
<tr>
<th>Sr. no.</th>
<th>Species</th>
<th>Parameters</th>
<th>Length of combretaceous trichome in µm</th>
<th>Presence of stomata</th>
<th>Dimention of guard cells in µm</th>
<th>Dimention of upper epidermal cells in µm</th>
<th>Dimention of lower epidermal cells in µm</th>
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Average and range calculated by taking 10 readings for each parameter. – sign indicates absence of trichomes as leaves are glabrous, Lt- Long trichomes, St- Short trichomes, Ue- Upper epidermis, Le- Lower epidermis.
**Table 3. LEAF CONSTANTS / QUANTITATIVE ANALYSIS**

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<th>Stomatal index for lower epidermis</th>
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Average and range calculated by taking 10 readings for each parameter. – sign indicates absence of stomata as leaf is hypostomatic.
Discussion

Morphology:

After detailed morphological studies, it is confirmed that, genus *Terminalia* L. is characterized by tree habit, petals lacking, fruits drupes or samara, presence of glands and / or dometia. Drupes were found in *T. bellirica*, *T. catappa*, *T. chebula*, *T. citrina*, *T. pallida*, *T. procera* and *T. travancorensis*, where as samaras in *T. bialata*, *T. cuneata*, *T. elliptica*, *T. myriocarpa* and *T. paniculata*. The floral features were more or less constant throughout the genus and not found suitable to delimit the species.

Variations were seen in number, size and shape of the glands. Glands were found in *T. chebula*, *T. citrina*, *T. cuneata*, *T. elliptica*, *T. myriocarpa*, *T. paniculata*. It was mentioned in the earlier literature / floras that, the glands were absent in *Terminalia pallida*, however caducous glands were observed during the present investigation. The glands were lacking in *T. bellirica*, *T. bialata*, *T. catappa*, *T. procera*, and *T. travancorensis*. The dometia were present in *T. catappa* (Tilney & Van Wyk, 2004), *T. bialata*, *T. chebula*, *T. citrina* and *T. pallid* absent in *T. bellirica*, *T. cuneata*, *T. paniculata*, *T. myriocarpa*, *T. procera*, & *T. travancorensis*. It was mentioned in the earlier publish literature that, leaves of *T. bellirica* were glabrous, however, combretaceous trichomes were reported during the study, hence the leaves were pubescent. It was reported in all the floras the number of stamens in all the *Terminalia* L. species were 10 only, however, 10 – 16 stamens in two whorls were recorded in *T. bellirica*, 10 – 22 in *T. catappa*, 10 – 18 in *T. chebula* and *T. citrina*. The number of sepals were uniformly five, however, 5 – 8 sepals were recorded in *T. bellirica*, 5 – 9 in *T. catappa*, 5 – 10 in *T. chebula* and *T. citrina*. 
Bark anatomy and maceration:


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Thick walled tanniniferous cells were reported in *T. pallida* only. Sieve elements with scalariform pitting were reported only in *T. myriocarpa*. Sieve elements with numerous pits were present only in *T. paniculata*.

**Wood anatomy and maceration:**

Diffuse – porous wood was found in all the species. Rao & Juneja in 1971 mentioned diffuse – porous wood in *T. cuneata* and *T. bialata*. Burgess (1966) reported ‘definitely ring porous’ wood in *T. citrina*, however diffuse – porous wood was confirmed in all the species. Wood growth ring boundaries were distinct in *T. bellirica*, *T. catappa*, *T. bialata* (Vliet, 1979), *T. citrina*, *T. elliptica* and indistinct in remaining species. Vessels were radially grouped, end wall with simple perforation. Vliet (1979) had also reported the same. Lateral wall pits were vestured in all the species. Ray cells at the end winged, this feature was reported in *T. bialata*, *T. pallida*, *T. procera* and *T. travancorensis*. Ray parenchyma uniseriate in *T. bellirica*, *T. bialata* *T. cuneata* and *T. travancorensis*; mostly uniseriate, rarely biseriate in *T. catappa*, *T. citrina*, *T. elliptica*, *T. myriocarpa*, *T. pallida*, *T. paniculata* and *T. procera*; mostly uniseriate, rarely biseriate or triseriate in *T. chebula*. Metcalf & Chalk (1950) had reported rays exclusively uniseriate or occasionally biseriate in *T. bellirica*, *T. bialata*, *T. citrina*, *T. myriocarpa*, *T. paniculata* and *T. elliptica*. In *T. myriocarpa* rays homogenous with all cells procumbent and the rest of the species showed heterogeneous rays consisting square, procumbent and upright cells. Axial parenchyma predominantly paratracheal in *T. bialata*, but Metcalf & Chalk (1950) reported *T. bialata* with both aliform and winged aliform parenchyma, remaining species showed winged aliform parenchyma. Metcalf & Chalk (1950) had reported abundant tyloses in *Terminalia*, however, tyloses were reported only in *T. myriocarpa*. Canals of traumatic origin were present only in *T. bialata* whereas, Ramanujam (1972) had reported the same in *T. catappa*, *T. myriocarpa* and *T. procera*. Vessel ray pits with much reduced borders to apparently simple, pit outline rounded in all species.
except *T. cuneata* in which pits were vertical. Nodal vessels observed in *T. cuneata* only.

Scurfield & Michell (1973) had reported prismatic crystals in ray parenchyma of *T. bellirica*, however, the author had reported the same in *T. bialata, T. myriocarpa, T. pallida, T. paniculata, T. procera* and *T. travancorensis*. Druces were present in axial parenchyma in wood of *T. catappa* only, this was reported by IAWA Committee (1989) and Gupta & Singh (2005).

Xylem parenchyma with few pits and with many circular pits, common in all species, where as vertical pits were reported in *T. paniculata* only in maceration. Starch grains in parenchyma reported only in *T. cuneata* in maceration, the same was reported by Chauhan (2005). Xylem fibres simple, reported in all the species, branched fibres found in *T. chebula, T. citrina, and T. paniculata*; Septed and crystalline fibres found in *T. myriocarpa*. Gupta & Singh (2005) had reported the same. Rao and Purkayastha (1972) had reported occasional presence of septed fibres in *T. chebula, T. citrina* and *T. travancorensis*, however, the author could not found septed fibres from these species, even after thorough investigation. Pitted fibres in *T. citrina, T. myriocarpa* and *T. travancorensis*. All the species showed vessels with lateral wall pits vestured. Gupta & Singh (2005) had reported the same, Jing (1988) had reported lateral wall with vestured pits in *T. myriocarpa*. Some vessels with scalariform pits on their lateral wall were observed in *T. chebula, T. elliptica, T. pallida, T. paniculata* and *T. travancorensis*. Annular thickening was observed only in *T. elliptica*.

**Petiole anatomy:**

*T. catappa*, 4 – 6 in *T. elliptica* and *T. myriocarpa* and 6 – 8 in *T. procera*. Metcalf & Chalk (1950) had recorded mucilage canals in number of *Terminalia* species. Druces common in cortical region of all the species (Richard, 1984). Metcalf & Chalk (1950) reported druces in *T. chebula*, however, the author had observed druces in all the species.

**Leaf anatomy and dermatology:**

Leaf anatomical studies revealed single layer of palisade in *T. bellirica*, *T. bialata*, *T. catappa*, *T. chebula*, *T. paniculata*, and *T. travancorensis*; double layered in *T. citrina*, *T. cuneata*, *T. myriocarpa*, *T. procera*; double or triple layered in *T. elliptica* and triple layered in *T. pallida*. Vascular bundles of lateral vein were vertically transcurrent in *T. bellirica*, *T. chebula*, *T. citrina*, *T. pallida*, *T. paniculata*, & *T. travancorensis*. Metcalf & Chalk (1950) stated presence of vascular bundles of lateral vein vertically transcurrent in *Terminalia* species, however, they were found to be species specific. Bundle sheath of midrib vascular bundle of the leaves sclerenchymatous, continuous in *T. bellirica*, *T. chebula*, *T. paniculata*, & *T. travancorensis*; in patches of parenchyma in *T. bialata*, *T. catappa* and in patches of sclerenchyma in *T. chebula*, *T. citrina*, *T. cuneata*, *T. elliptica* and *T. myriocarpa*. Endodermis continuous and single layered in *T. bellirica*, *T. bialata*, *T. catappa*, *T. chebula*, *T. citrina*, *T. cuneata*, *T. elliptica*, *T. paniculata*, & *T. travancorensis*, in patches in *T. chebula* and *T. myriocarpa*. Pericycle inconspicuous in *T. bellirica* and *T. travancorensis*, single layered in *T. catappa*, *T. bialata* and *T. paniculata*; in patches in *T. chebula*, *T. citrina*, *T. cuneata*, *T. elliptica*. Leaves amphistomatic in *T. pallida* only and remaining species were hypostomatic.

All the species were exhibited anomocytic i.e. Ranunculaceous stomata, the same had been stated by Stace (1965) and Rao & Ramayya (1984). Trichomes were absent (leaves glabrous) in *T. pallida* and *T. travancorensis*. Combretaceous
trichomes were present in all pubescent species. Solereder (1908); Metcalf & Chalk (1950); Stace (1965) and Rao & Ramayya (1984) had also reported the same. Combretaceous small and large trichomes present only in *T. catappa* and *T. myriocarpa*. Epidermal papillae and cuticular striations were reported only in *T. paniculata*. This fact was also reported by Ramassamy & Kannabiran (1996).

This is an interesting genus and there is lot of scope to study the genus in detail by all aspects. As there are certain ambiguities in the taxa delimitation, it should be revised taxonomically from India.

**Conclusion:**

The species of *Terminalia* L. show morphological variations in the glands, dometia and flowers. The number, size, shape and position of glands and domatia are found to be variable among the same species. The number of sepals and stamens is found to be variable even in the same species.

The anatomical, maceration and dermatological studies have generated huge parameters which are diagnostic to particular taxa. These parameters are found to be taxonomically significant, therefore, can be utilized as constant criteria to delimit the taxa.

These parameters can be employed in combination for standardization or to detect adulteration in the crude drug of particular species.