

distribution from plant to plant. Secondary metabolites are mostly accumulated by plant cells in smaller quantities than primary metabolites. They are synthesized in specialized cells at particular development stages, making their extraction and purification difficult. These secondary metabolites exert a profound physiological effect on the mammalian system and thus are known as the active principles of that plant. The physiological effect of these active principles is used for curing ailments (Padmakumar 2009).

Among these herbals, *Pterolobium hexapetalum* (Caesalpiniaceae) is one of the traditionally used medicinal plants in India. The leaves and bark of this plant are widely used for coughs in children and delivery pains. The plant has a number of therapeutic activity against fever, toothaches, chest pain, dog bites (rabies), vomiting, heat boils, diarrhoea, constipation, piles, bone fractures, jaundice, ulcers, skin infections, wounds and venereal diseases (Ganesan et al. 2004; Duraipandiyar et al. 2006; Pullaiah 2006; Padal et al. 2010; Samuel and Andrews 2010). Based on this ethnobotanical knowledge, the present study was aimed to explore pharmacognostic characters such as microscopy, scanning electron micrographs, fluorescence and preliminary phytochemical investigations of *P. hexapetalum*.

14.2 MATERIALS AND METHODS

14.2.1 COLLECTION AND IDENTIFICATION OF PLANT MATERIAL

Fresh leaves and stems of the *P. hexapetalum* were collected during October 2013. The taxonomic identity of the plant was confirmed from Botanical Survey of India (BSI), Southern Regional Centre, Coimbatore, Tamil Nadu. The herbarium specimen was deposited in the Department of Botany at Bharathiar University (Accession No BUBH006241). The fresh leaves and stems were washed under running tap water to remove the surface pollutants and were air-dried under shade. Then they were separately homogenized into a fine powder using a mixer for further studies.

14.2.2 PHARMACOGNOSY STUDIES

14.2.2.1 Anatomy

The required samples of different parts were cut and removed from the plant and fixed in FAA [formalin (5 mL) + acetic acid (5 mL) + 70% ethyl alcohol (90 mL)]. After 24 h of fixing, the leaf and stem transverse sections were prepared through hand sectioning with a razor blade and the anatomy of the stem was recorded. With the help of the microscope to document the anatomy of the various tissues, the lignified and cellulosic tissues were distinguished using differential staining techniques (Evans 1997).

14.2.2.2 Photomicrographs

Microscopic descriptions of cells are supplemented with micrographs wherever necessary. Photographs of different magnifications were taken with a Nikon Labphoto 2 microscopic unit and scanning electron microscope. For normal observations, bright field was used. For the study of crystals, starch grains and lignified cells, polarized