ABSTRACT: Epidermal characteristics of leaves such as epidermal cell walls, type of stomata and trichome are important parameters at generic and specific levels on different group of plants. Stomata are pores formed by a pair of specialized cells, the guard cells, which are found in the surface of higher plants and which can open and close to control gas exchange between a plant and its environment. A comparative study of the leaf epidermis of three species of Asteraceae family was done and observed the variation.

KEY WORDS: Epidermis, Stomata, Artemisia vulgaris, Chrysanthemum indicum, Cosmos sulphureus, Asteraceae.

INTRODUCTION
Asteraceae is a very large cosmopolitan family, highly advanced and easily recognized with a worldwide distribution [1]. It is represented by 13 tribes, 84 genera and over 240 species. It belongs to the sub-class Asteridae in the order Asterales [2]. Many plants in the family are economically important as ornamental, green vegetables and weeds [3]. The members of the family are largely woody herbs, shrubs, a few are trees and climbing herbs. Important weed species in this family include Chromolaena odorata Linn, (which is widespread in the disturbed area of forests), Tridax procumbens Linn, Ageratum conyzoides Linn, Aspilla species (pers) [4]. The ornamental species include Zinnia, Tagetus (marigold) and Helianthus annuus (sunflower). Some of the important species are cultivated while others grow in the wild. They include Vernonia amygdalina(bitter leaf), Lamuela taraxacifolia, Crassocephalum crepidioides and Lactuca sativa (lettuce). The seeds of Helianthus annuus yield oil. Some members of the family are also known to be ethno medical uses in Nigeria. The use of anatomical methods in taxonomic investigations cannot be over emphasized. Although no character is absolutely immutable, some are more fixed than the others and it is on those that are less plastic that the systematic analogists rely because they are not really affected by environmental conditions [5]. The taxonomic value of leaf epidermal characters is well documented [6] [7] [8] [9]. Metcalfe and Chalk [10] gave a sparse description of the general anatomy of the family Asteraceae. There were few studies about the epidermal characters in Asteraceae family species. However, the aim of study is to know the anatomical changes (stomata and trichomes) with respect to the environmental changes and the results were compared.

MATERIALS AND METHODS
Mature young leaves were collected from the local areas of Visakhapatnam, Andhra Pradesh, India. The plants were identified with the help of description given in the Flora of Madras Presidency, Flora of British India and Herbarium available in the Department of Botany, Andhra University, Visakhapatnam, Andhra Pradesh, India. Mature leaves were fixed in Formalin acetic acetaldehyde (FAA) and subsequently stored in 70% alcohol. The study comprises of three species of the family Compositae (Asteraceae). The list of plants, investigated, sources were given in Table-1.
The peeling of epidermis of fresh leaf material that was fixed in FAA was obtained. The peelings were taken from the middle portion of the leaf, both the surfaces [11] either by scrapping or a safety razor blade directly or by treating them with Acetic acid (1-100%) of NaOH (0.5-20%) based on the material. The preparations were stained with Safranin and mounted in Glycerin and observed. Observations were made using Olympus compound microscope under various magnifications. Ocular micrometer was used for all the measurements and calculations were made by calibrating with stage micro meter. Figures were sketched using camera lucida and the magnifications (10x X 40x) were indicated in the illustrations.

RESULTS AND DISCUSSION
In Artemisia vulgaris cells were irregular sinuous anticlinal walls. In Chrysanthemum indicum the cells were pentagonal with slight wavy margins. In Cosmos they were pentagonal with more or less sinuous antclinal walls shown in Pictures (1, 2, 3, 4, 5 and 6). Different combinations of stomata occur on the same surface of the leaf. However in all the species the basic stomatal type is anomocytic type. In addition to, anisocytic, dicyclic, tri, tetracyclic stomata are also present in some species along with anomocytic type. Rabieet al (2006 )[12] discussed the epidermal cells variation in Artemisia vulgaris. Our results about the species, agreed with their findings regarding the shape and arrangements of epidermal cells but little variation, it may reflect the environmental changes (soil, temperature, humidity, PH, and availability of nutrients).

CONCLUSION
Studies on epidermis have gained much importance during this century. This is because these studies are widely recognized in taxonomy and in the identification of plant materials in Paleobotany, Pharmacognosy and Forensic science. This study revealed the presence of variations in stomata types belonging to the same family. Differences were observed at abaxial and adaxial surfaces of the same leaf and even at the same surface. Therefore, from the present investigation we can conclude environmental change reflect some variations. These studies can be useful for future investigations.

Table: 1 Plant material used for the study:

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Name of the plant species</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Artemisia vulgaris</td>
<td>Visakhapatnam</td>
</tr>
<tr>
<td>2.</td>
<td>Chrysanthemum indicum</td>
<td>Visakhapatnam</td>
</tr>
<tr>
<td>3.</td>
<td>Cosmos sulphureus</td>
<td>Visakhapatnam</td>
</tr>
</tbody>
</table>

Fig:1 Artemisia vulgaris (adaxial surface)  
Fig:2 Artemisia vulgaris (abaxial surface)
REFERENCES
1. Nielsen MS (1965). Introduction to the flowering plants of West Africa; University of London Press Ltd.