

Ministry of higher education and scientific research

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College of biotechnology

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Aanatomy systematic Study genus Malvaceae in Qadisiya

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Summary

Through the study of the current research presented by the study of the anatomical characteristics of the skin of the Malveae family, Gossypium spp., Hibiscus esculentus, Hibiscus rosa-sinensis, Althaea rosea, Malva plant which was the study of the vertical walls of the skin of the leaves.

And study the types of the patterns and the size of the guard cells and measuring the dimensions of each and ensure the study of the spread of stomatas between the adaxial and abaxial surfaces of all types.

The taxidermy had a taxonomic importance in isolating the species for the current research. The wall forms also had a taxonomic importance for isolating the species under study

Introduction

Glory be to God and the Almighty on the human by boon, many of them, including plants that God gave beauty and importance. So man cared about plants and knew the value and distinguish what is beneficial or harmful. And has been interested in naming and classification based on their form or taste or distinctive qualities. These discoveries and attempts are now known as plant taxonomy, which sets the dividing line between the taxa .and taxa

The taxonomic studies rely on a lot of evidence and among these evidence are anatomical qualities. Which are no less important than other evidence and particularly speculative. Vack (Heywood, 1967). The importance of anatomical features in the diagnosis and placement of the groups in the correct classification site, as they illustrate some of the relationships that the studies could not shed light on them

(Radford, 1974) and others confirmed that the anatomical qualities have been used as a taxonomic evidence for more than 100 years. (Stace, 1980), and the study of(Solereeder, 1908) (Metcalf and chalk, 1950) are among the oldest and most important anatomical .studies available

(Davis and Heywood ,1963) used the anatomical characteristics of leaves and syphilis in the separation of races in Brhypodicae and through recent studies that used the anatomical characteristics of(Susa and Al-Bermain,2002) by studying the species of placenta in the genus Tannaea and segregation of the genus using skin polyyps in many plant parts in this genus

As well as study (Susa, 2008) in the use of many of the anatomical characteristics of the separation of types of genus Scorzonerol L and also. Study (Al-Muhana, 2010) through the study of the genus Carduus L. Al- katib mentioned that the malvaceae family include 82 genus and 1500 specis.

Materials and method

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The epidermal has been studied through the models obtained from the gardens in the city of Diwaniyah using the direct method.

The STRIPPING MEHOD and PEELING METHOD was used in the preparation of the abaxial and adaxial subjects. The two-dimensional forceps and the dissection needle were used. And then transferred to a slides and put a drop of the dye of calcerine and dye the porcupine and covered the slide cover to be ready for examination and kept in the refrigerator until the examination

The samples were examined and the measurements of stents and guard cells were taken under the compound microscope using the ocular micrometer. The samples were then taken with the digital camera.

Result and discussion

epidermal

The current study has shown that the epidermal anticlinal cell wall in the leaves of the abaxial surface. It was in the cotton plantation and the malva of the undulate type and in Gossypium spp. plant, and the Hibiscus esculentus, Hibiscus rosa-sinensis of the type was ,straight-curved . It was in Althaea rosea is straight-undulate type,

The adaxial surface was in the Gossypium spp. ,Hibiscus esculentus, Hibiscus rosa-sinensis plants were of a curved - straight type .in the plant of Althaea rosea was straight- undulate .either in malva was undulate

Thus, the shape of the walls is of taxonomic significance in isolating the species. Figure 1 This will agree with(Esau,1953) that the character of the wall ripple is due to the nature of the cottle and the pressure that the cells are subjected to during their differentiation or are related to environmental factors

The length of the larvae in the abaxial surface was 32 μm in malva .30 μm in Althaea rosea .while 35 μm in Hibiscus esculentus (28 μm) were found in the plant Gossypium spp.

was 24 μm , and in the plant of Hibiscus rosa-sinensis (was 36 μm adaxial surface 30 μm in malva ,in Althaea rosea 24 μm while Hibiscus esculentus 32 μm , 25 μm in the plant Gossypium spp. .And reached 32 μm in the plant Hibiscus rosa-sinensis.

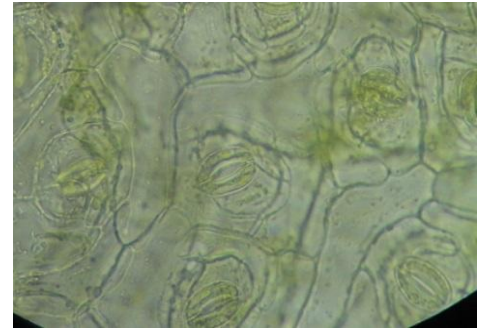
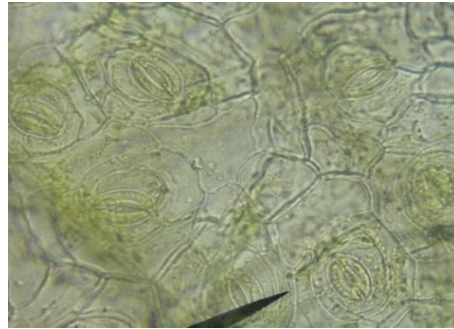
The epidermal cell display rate was 18.2 μm in the abaxial surface of the malva plant and in Althaea rosea plant was 12.5 μm and 14.2 μm in the plant and Hibiscus esculentus 9.5 μm in Gossypium spp. plant and was 12 μm in the Hibiscus rosa-sinensis.

In the adaxial surface, it reached 16.2 μm in the malva plant and 15 μm in plant Althaea rosea. In the plant of it Hibiscus esculentus was 15 μm and 10.4 μm in Gossypium spp. plant . .While the record of 11. 2 μm in the plant Hibiscus rosa-sinensis.

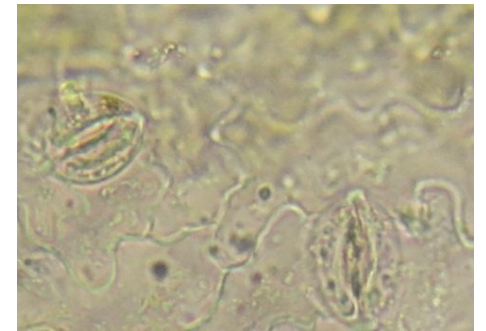
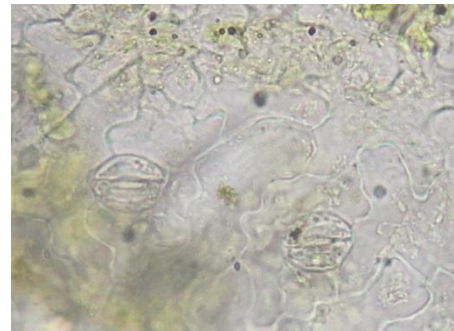
Thus, it was found that the dimensions in the adaxial and abaxial surface of the malvaceae family species had significant changes in length and width

. Table 1 Measurements and variations in epidermal characteristics and the leafy device measured in microcosm The malvaceae Family

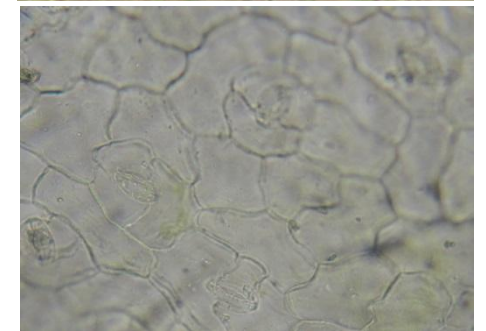
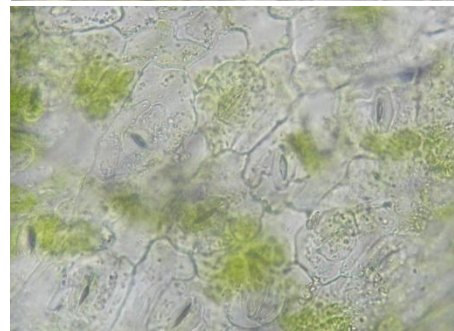
Hibiscus
rosa -
sinensis



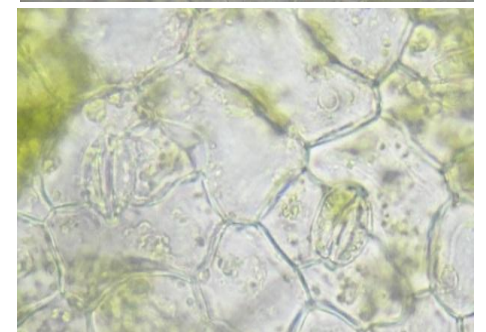
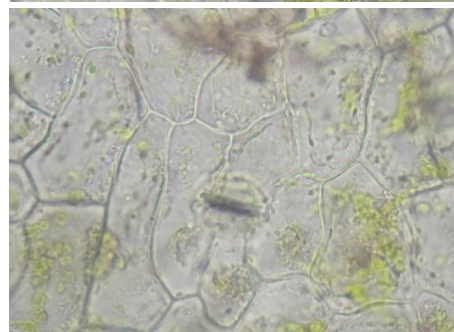
malva



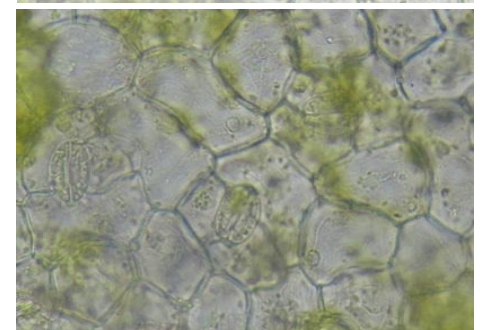
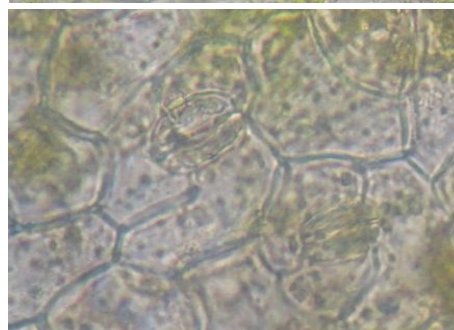
Althaea
rosea



Gossypium
spp.



Hibiscus
esculent
us



A – adaxial surface epidermal

B– abaxial surface epidermal

Stomata

It has become clear through the current research of the stomata complex to leaves of the family malvaceae with the presence of four of the stomata types

1- Diacytic type where there are two orthogonal and vertical cells on the guard cells. This type - was found in the abaxial and adaxial surface of the Hibiscus rosa-sinensis plant

2- anomocytic type, and has been characterized by the absence of subsidiary cells surrounding the guard cells. This type was found in the malvae plant in the adaxial and abaxial surfaces. It is also found in the adaxial surface only for Gossypium spp. plant

3- Paracytic type because there are two parallel cells of the guard cells. It was found in the adaxial surface of the plant and the Althaea rosea

4- anisocytic type. There are three or more subsidiary cells surrounding the guard cells, 4 which vary in size. This type is found in the adaxial and abaxial surface of Gossypium spp. Hibiscus esculentus the plant and the abaxial surface of the plant Althaea rosea.

It was possible to distinguish species through stomata complex, which proved to have a taxonomic importance in isolating the species under study

As for the length of stomata the average in the abaxial surface (2.5) μm in the malva plant an Hibiscus rosa-sinensis Althaea rosea either in the plant reached 2.3 μm and recorded in Gossypium spp. plant 2.6 μm

In the adaxial surface it reached 2.4 μm malva and Abelmoschus esculentus plant . 2.9 was in Gossypium spp. Hibiscus rosa-sinensis and Althaea rosea 2.5 μm .

The average width of stomata in the abaxial surface was 2.3 μm in the malva and Hibiscus esculentus plant and reached 2.5 μm in the Althaea rosea plant. In Gossypium spp. it was 2.2 μm and 1.7 μm in the Hibiscus rosa-sinensis plant.

The adaxial surface was 2.5 μm in the malvae and Hibiscus esculentus plant, while in the Gossypium spp. plant it was 2.3 μm and 1.5 μm in the Hibiscus rosa-sinensis plant while in Althaea rosea plant was 2.4 μm

The length of the guard cells of the abaxial surface of the malva plant was 3.5 μm and in Althaea rosea plant was 3.7 μm , while in Hibiscus esculentus the plant, it was 2.5 μm . The Hibiscus rosa-sinensi 4.3 and hit 3.4 μm in Gossypium spp. plant.

In the adaxial surface, the average length of the guard cells was 3.6 μm in the malva plant and Althaea rosea plan Hibiscus esculentus t, reaching 2.6 μm

In Gossypium spp. plant, it reached 3.8 μm and 4 μm in the Hibiscus rosa-sinensis plant

While the rate of presentation of the guard cells of the abaxial surface of the malva and the Hibiscus esculentus 2.6 μm and in the Althaea rosea was 2.5 μm and 2.7 μm in Gossypium spp. plant, while in the Hibiscus rosa-sinensis to 1.7 μm . and in the adaxial surface was the rate of guard cells 2.5 μm for the plants of Hibiscus esculentus and Gossypium spp. In the plant of the malva was 2.2 μm and 2.3 μm of the Althaea rosea .while of the plant Hibiscus rosa-sinensis reached 1.8 μm

As for the spread of the stomata between the adaxial and abaxial surfaces of the epidermal, which is referred to as the index of stomata and calculated according to (Stace,1965 a) by the following equation:

(Directory of stomatas = number of stomata; (number of stomata + skin cells*100

By noting Table 1, we find that the spread of the stomata in the adaxial and abaxial surfaces of the malvae, the Hibiscus esculentus and Gossypium spp. are equal .while Hibiscus rosa-sinensis Althaea rosea adaxial surface . the spread of stomata was more than the abaxial surface.

(Eisou, 1953) and(Amran, 1988) the increase in size and frequency of stomataes may be in response to certain environmental conditions such as drought, increased sun exposure, or chromosomal energy. This was demonstrated by(Al- Hussein and Al- Bermani,2001) when they studied BROMUS I

As for the surface cladiq of the current research two

Species were found in the indumentum species

A - unicellular hairs

Found in the flowering plant

1 - in the adaxial and abaxial epidermal of the *Abelmoschus esculentus L*

2 - in the adaxial and abaxial epidermal of the *Hibiscus sabdarriffa*

3 - in the adaxial and abaxial epidermal of the *malva*

4 - in the abaxial epidermal of the *Gossypium spp.*

B - Multicellular hairs stellate hairs

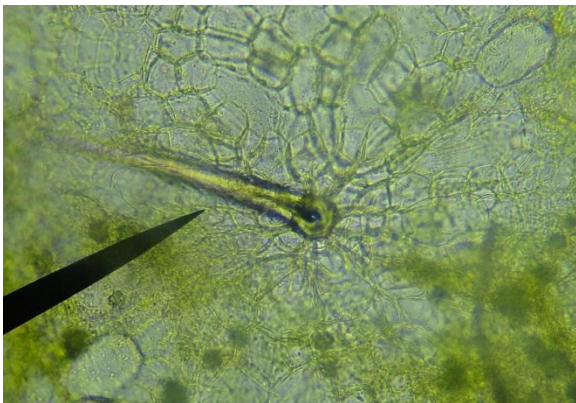
This type was observed in the flowering plants

1 - in the adaxial and abaxial epidermal of the *Malva*

2 - in the adaxial epidermal of the *Gossypium spp.*

Thus , the character of the indumentum surface classified as a classification of the isolation of some types of malvaceae

A



B



A - unicellular Trichome found in

1 - in the abaxial epidermal of the *Gossypium spp*

2 - in the adaxial ana abaxial epidermal of the *Hibiscus esculentus* .

3 - in the adaxial ana abaxial epidermal of the *Hibiscus rosa-sinensis*

4 - in the adaxial ana abaxial epidermal of the *malva*

B - Stellate hairs multcellur found in

1 - in the adaxial and abaxial epidermal of the Althaea rosea

2 - in the adaxial epidermal of the Gossypium spp.

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