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Morphological and Anatomical Comparative of *Astragalus hamosus* L. which growth in Iraq and Turkey(Antalia)

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ABSTRACT
Morphological and Anatomical characters had been studied, the plant collected from different region in Iraq and (Antalia) Turkey, the characters such us high of plant, the leaflet and flowers shaped and colour flower had been studied, the result was samiller except some different in high of plant, nature of growth in addition the colour of flowers which was yellow and violet in Iraq and violet in Antanlial, inaddition the different in length of stamenes and pistle , the characters of epiderm and the number of stomata, the hairs frequency and the type of it, in addition to cross section in stem which there wasn't different except in number of vascular band and width of pith and cortex which was bigger in species of Turkey.

Introduction
A*stragalus* is a large genus of about 3oo species of herbs and shrubs plant, belong to the (fabaceae) family and the subfamily faboideae[1] In Iraq there are 116 species which growth in mountain [2], while in turkey has 445 species in 62 section)[3] A*stragalus hamosus* L. (subfamily- papilioneceae) is one of most important medicine plants. Traditionally used for various health needs.[4].
It is an annual herbaceous, the height more of 30cm, and its hard drought tolerant, the leaf compound (leaflet), small flowers white or yellow the bodes are Linner, crescent or horse shaped, greyish, yellow with beek, it is has many common names such as Adhafer Al-shitan, kether in Arabic and Melilot kings rown, hook pod, milk vetch in English [2],[5] the important of *A. hamosus* species belong to a wide range pharmacological effect and the highlight of chemical constituents [6]. The seedpod of it used for treatment of headache, vertigo, stroke, dementia, respiratory discomfort and urinary complications [7,8].
There are many researches about the medicine important toxicity, pharmacology but there is not about morphology and anatomy except a lot of such as Anatomy cotyledon in leguminosae in general by [9,10] and Anatomy leaflet and stem of some Astragals speciesby [11]the study goal to comparative between Morphological and Anatomical characters to species *Astragalus hamosus* which growth in different region in Iraq and Turkey and notice the effect of Eecology in the morphological and anatomical characters.

Materials and methods
The species was collected from kaler-sulimane in Iraq during the survives trips in April and from Turkey (Antalia) in June and the following anatomical aspects were studied. The leaf surface :-
After the plants leaves was wished and dried, the epiderm (abaxial and adaxial) are prepared by used lactic acid in 40% percentage and with hot for 5miuute then leaves became fresh. Then the epidermal peeled and stripped off with forceps[1] Then the samples were put on slides and mounted by cover slides, all slides were experimented by microscope (Motic) and photographed using sony camera.
The cross-sections to stem prepared by microtom and button slide then stained by 1% safranin for 30-45 minute, excess stain was washed off with distilled water and loading onside[11]. Stomatal frequency, stomatal shape studied it in abaxial and adaxial surface, in addition to trichome, while the character which study in stem section were the thick of section, the number of bundle sheet width of cortex and pith.

Result and Discussion
Morphological characters -
The Species In Two region Was Annual – herbium , branch from base Asymmetric White hair The in Florescence accpitate raceme Up to 12 flowered , Pcdicalvery short , calyxtubler 2.5-3cm standerd (6-8.5 cm) Pod sessile liner – horse shoe shape 30-40 cm X 2-3 cm , but there are alot of difference in some characters such us high of Plant in Iraq the high was

between (30-60 cm) while in turkey the high was (3.5-4cm)

The stem was ascending – Pros trate in species Which collected from Iraq whil the other *Astragalus* is alarge genus of about 3000 species of herbs and Shrubs , belonging to the Legume family (fabaceac) and the subfamily faboideae , The genus is native to temperate regions of the Northern Hemisphere [3] in Iraq there are 116 Species which growth in Mountain [4] , While in turkey , *Astragulas* has 44 species in 62 section [2] *Astragalus hamosus* many have , common Names such Adhafer al shitan , Kether a was Erect – ascending , the leaflet between (5-12 x 3-5 µm)in Iraq and (8-14 x 3-5 -5 µm) in Turkey , the colour of corolla a yellow – violet in Iraq , and violet in species which collected from in turkey , the difference maybe reflect to effect of nature of region and the climate which effected in high of plant and the dimension of

leaflet the growth nature of stem , the resutts were agreement with [3],[5]

- Anomatical characters

Stomata shape: Stomata shape in species was anomocytic and paracytic,guard cells have kidney shape in species in two region.The anticlinal walls of epidermal cells in stem was straight-curved or straight oblique,the dimension of stomata(stem) for collected from Turkey was (20-30 x 20-24 µm),while in Iraq (20-36 x 14-18 µm),the stomata frequcncy was difference in Turkey species was (30), while in Iraq was (25).The epidermal of Lower and upper Leaflet was strongly undulate , and the Frequency of stomata was equall in abaxial and adaxial in species which collectes from two region which was (95-130), the research recorded some difference in dimension of stamata which was (12-20 x 12-15 µm), in abaxial and (28-40 x 16-24 µm), in adaxial in species in Iraq, in species which collected from Turkey the dimension of stamata was bigger (16-24 x 12-18 µm), in abaxial and adaxial was (30-45 x 18-25 µm).**Cross sections in stem** :The cross section have similar shape of species which collected from two region,plate (1,2), the shape was subcircule.The results showed that , The epiderm was uniserite with thin layer of cuctile inaddition of Stomata's and hairs the ground tissues represented to cortex while the vascular system represented by vascular bundle which was big and small and it arranged in circle shape which was narrow and width pith , the width topith was (30-34µm) while the width of cortex (180-200µm) in samples of Iraq the result showed there are difference in width of pithto the specie which growth in turkey it was (40-45)µm and width of cortex (200-210)µm so as there are difference between the number of vascular band which was (10) in specie in Iraq whoch was (8) in cross-section to in species which collected from turkey , maybe that belong to the difference in differentiation growth period in time of collected, from Result we can conclusion some facts , the region of growth can effects on the high of plant and nature of growth , so that the climat may be was important to make difference in the demission of cells in the epidermis and the tissue in cross section,The Anatomic characters was more fixed in the alternative smaller vascular band with the bigger ,stomata and cross section shape ,under the epiderm there are collenchymas ,scloronchymay and parenchyma, the pith was width and the fiber cap out of phylum, the number of vascular was 14 and the type of it open consist of vascular cambium.

Indumentum

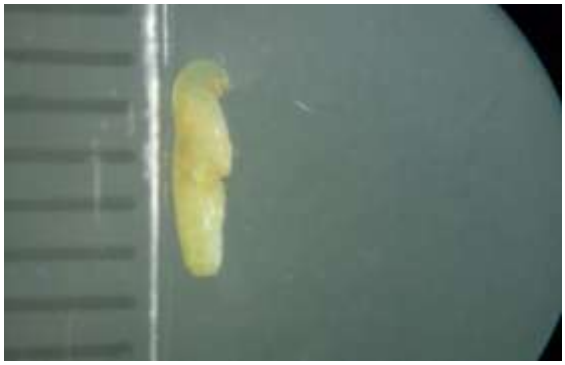
The species have white no glandular and asymmetric the base shape which was circular and the hairs sessile. The hairs spread in all the parts of body(leaflet, stem, calyx , ovary , flower , pod).

2

1

4

3



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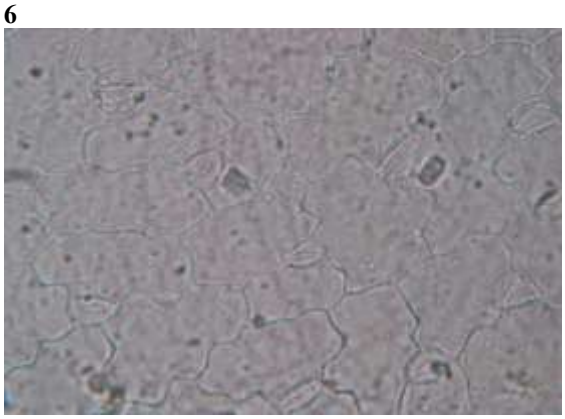

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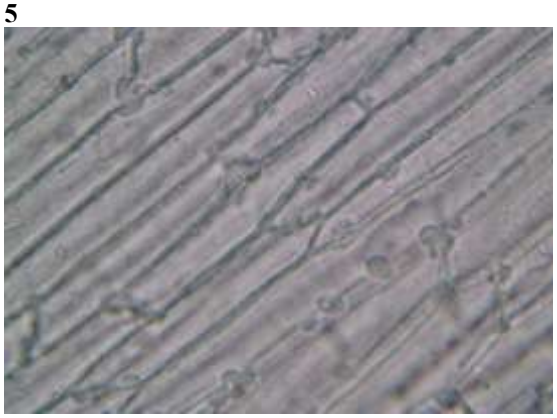

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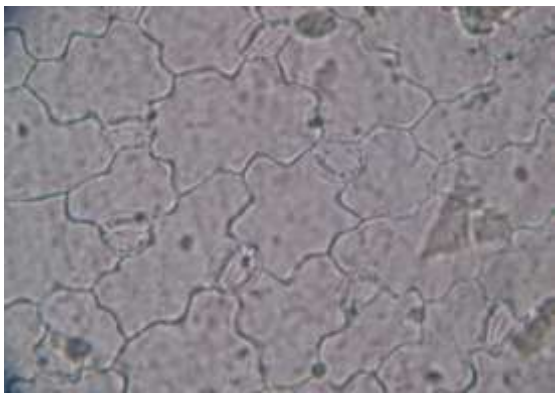

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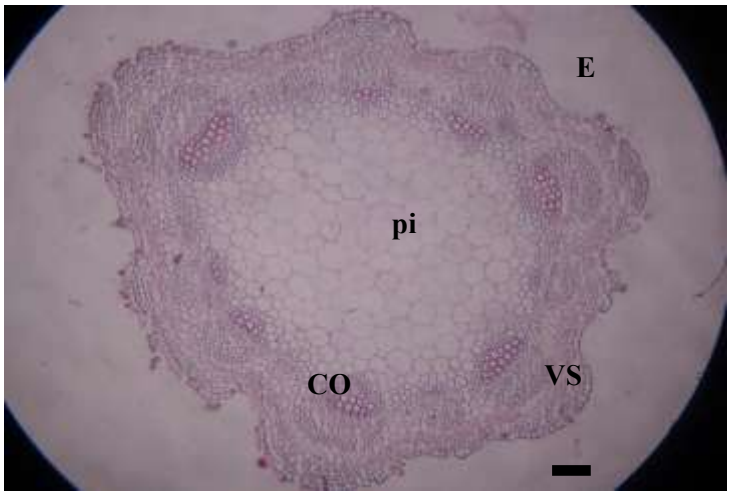


m10µ 12µm

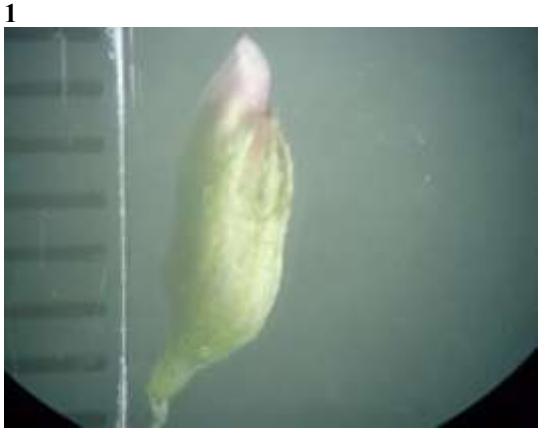
11

plate(1): 1,2 plant in nature 3-Flower 4-Calyx 5-Stament 6-Pistil 7-Epiderm of stem 8- Epiderm of abaxil 9- Epiderm of adaxil 10- Epiderm of fruit 11-Cross section of stem

2

1

4



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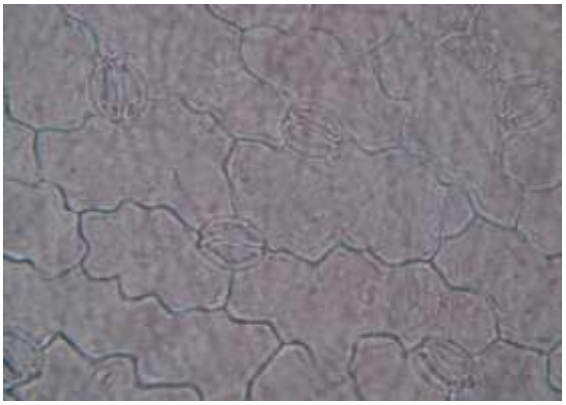

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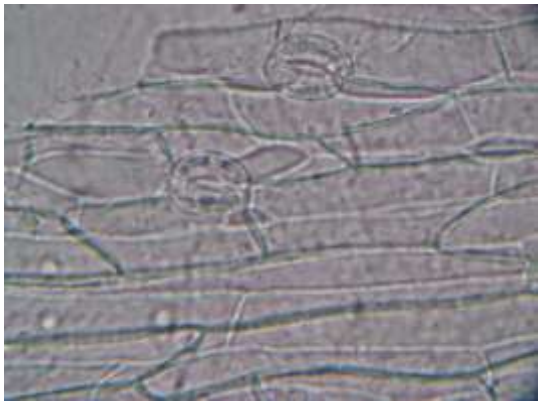

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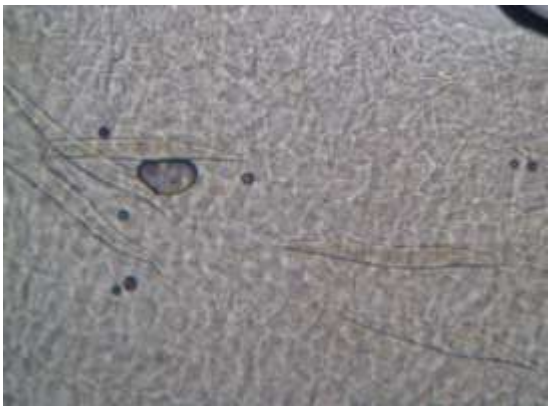

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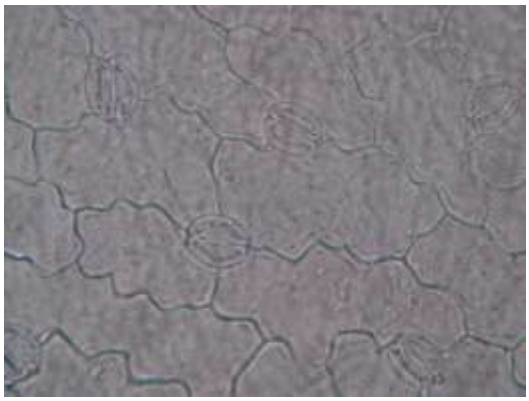

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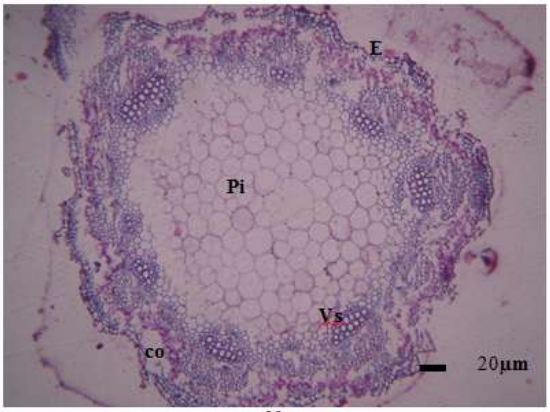

11
10µm

plate(2): 1,2 plant in nature 3-Flower 4-Calyx 5-Stament 6-Pistil 7-Epiderm of stem 8- Epiderm of abaxil 9- Epiderm of adaxil 10- Epiderm of fruit 11-Cross sectionof stem
E: Epiderm , Pi: pith , Co : CortexVs : Vascular band

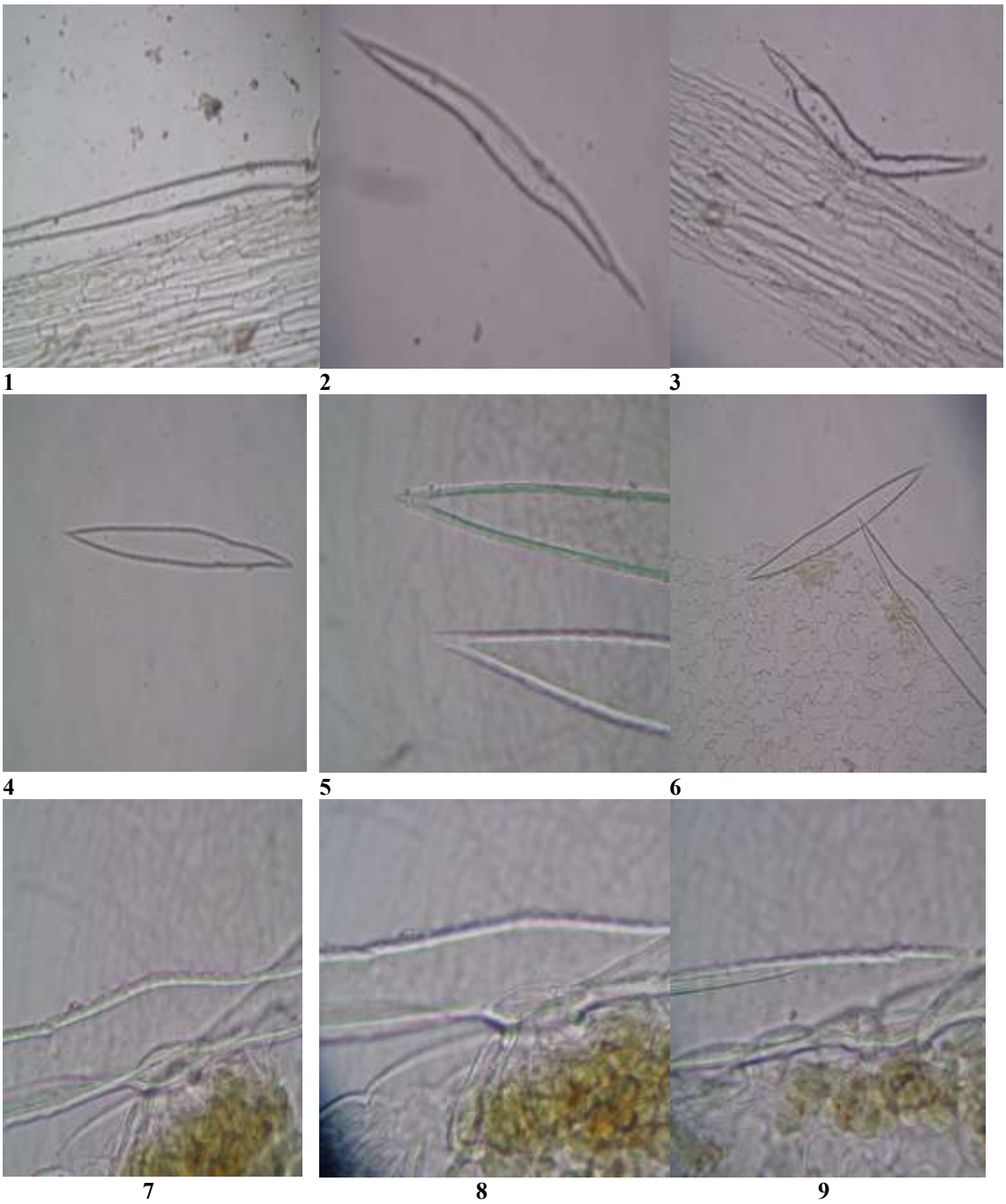

Plate (3): Trichome in Leaflet , Stem , Pod .
1-4 :Trichome shape , 5-6 : Apex of trichomes , 7-9 : Base of trichomes

References

[1] AL-sammarai, R.H. (2014). Biosystematic study of species genus Lathyrus L. (Papilinoaceae) in Northern and Middle of Iraq**,** Athesis, College of Education for pure science, univ. of Tikrit.

[2] Chater, A.O. (1968). *Astragalus* L..I Ntalin T,G and al.(eds) Flora Europeae **VOL.2**, PP.108-124 Camberidge Uni., press, Cambridge.

[3] Tonsend, C.C. and Guest, E. (1974). Flora of Iraq, **Vol.3**. Ministry of Agriculture and Agarain reform, Baghdad, Iraq .

[4] Umer, K.H; Zeenat, F; Ahmed, W. and Khan, A. (2017). Therapeutics, Phytochemistry and Pharmacology of IKlilul Malik (*Astragalushamosus* Linn) Anatural Unani Remedy, In , *J of Herbal Medicine* 5(5)01-05.

[5]Davis ,P.H. (1978).Floral of Turkey and the East Aegean Islands, **Vol6**, Edinburgh, Univ, press, Edinburgh.

[6] AL-snafi, A.E.(2015).Chemical constituents and pharmacological Effects of *Astragalushamosus* and *Astragalus tribuloides*,**Vol5**.Issue(**4**).321-328.

[7] Taheri, M.H; Hosseini, M.; Salim, i, M; Moodi, H. and Dorranipour, D.(2018). Acute oral Toxicity evalution of *Astragalushamosus* seed pod Ethanolic

extract in Wistarats, *J, Pharmaculty Sciences*,24,23-30.
[8] Hakim, A; Tajudinn, A.; Ghufren and Nasreen, J.(2010).Evaluation of anti-inflammatory activity of the pods of Iklil ulmalik (*Astragalushamosus*), Jorurnal of Natural products and Resourced, Vol1., pp34-37.
[9] Smith, D.L. (1983). Cotyledon anatomy in the Leguminosa, Botanical *J, Linnean society*, **VOL.86**, Issue(**4**) p.p325-355.
[10] Zohlami, A.and Zoughi, M. (2003). Morphological Variation in *Astragalushamosus* L. and *coronillascorpioides* L. Populations of Tunisia, Euplytic., Jorurnal of Natural products and Resourced.
[11] AL-Sammarai, R.H. and AL-khesraji, T.A. (2016).Comparative Anatomical study of leaflets and stems of some species of the genus *Astragulas* l. in relation to photosynthetic pathways, Tikrit. Journal of pure science, ISSUN,:21

دراسة مظهرية تشريحية مقارنة للنوع *Astragalus hamosus* L. النامي في العراق وتركيا (انطاليا)

رنا هاشم علوش السامرائي
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الملخص

تم في هذا البحث دراسة الصفات المظهرية والتشريحية لنوع *Astragalus hammosus* L. ومدى تأثرها بالبيئة حيث تم جمع العينات من بيئات مختلفة الاولى في العراق من محافظة سليمانية واربيل والثانية من (انطاليا) في تركيا، حيث درست الصفات المظهرية كارتفاع النبات وشكل الاوراق والازهار وعددها ولونها وشكل المدقة والسداة وقد تشابهت النتائج عدا بعض الاختلافات الطفيفة في طول النبات وطبيعة نموه وكذلك لون التويج حيث وجد نوع من الأزهار اصفر وبنفسجي في العراق وفي انطاليا وجد التويج بلون بنفسجي، اضافة الى اختلاف الطول للمبيض والسداة ودرست صفات البشرة وعدد الثغور والمعامل الثغري وتردد الشعيرات ونوعها، اضافة الى مقطع مستعرض في الساق الذي لم يختلف الا في بعض الصفات مثل عدد الحزم الوعائية ،اللب والقشرة حيث ظهرت بشكل اوسع في النباتات المجموعة من تركيا.