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- Document Title** : *Taxonomic Studies Of the Genus Zygophyllum (Zygophyllaceae) In Saudi Arabia*
دراسة تصنيفية لجنس الزيجوفيللم (العائلة الرطربية) بالمملكة العربية السعودية
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- Abstract** : Zygophyllum L., the largest genus of Zygophyllaceae comprises about 100 species known from the Mediterranean to Central Asia, more than eleven species growing in Saudi Arabia specially in desert and saline habitats, This study deals with taxonomy of Zygophyllum species growing in Saudi Arabia depending on morphological and anatomical characters of stems, leaves, and petioles to eleven investigated species. By comparing the morphological results of eleven Zygophyllum species under investigation, *Z. album*; *Z. boulosii*; *Z. coccineum*; *Z. decumbens*; *Z. fabago*; *Z. hamiense*; *Z. mandavillei*; *Z. migahidii*; *Z. propinquum*; *Z. qatarense* and *Z. simplex*, we conclude that we have characters of major importance such as plant habitat, shape of leaves and characters of minor importance such as shape, and size of the fruit. Those characters enabled the construction of an artificial morphological key separating *Z. simplex* from the other ten species by its herbaceous habitat and simple sessile leaves. The other ten investigated species divided into two categories, one with lower simple and upper compound leaves and include *Z. hamiense*; *Z. mandavillei*; *Z. qatarense* the other with upper and lower compound bifoliate leaves include *Z. album*; *Z. boulosii*; *Z. coccineum*; *Z. decumbens*; *Z. fabago*; *Z. migahidii*; *Z. propinquum* Characters of shape, and size of the fruit and shape of leaflets can be differentiated between the ten species of the two categories. Anatomical features of stem, leaves and petiole of the eleven investigated Zygophyllum species show characters of major importance such as stem outline, leaf outline, the arrangement of leaf vascular tissue, in addition to the number of vascular bundles in the inner leaf whorl, and characters of minor importance such as leaf mesophyll, and the branching of the main vascular bundle in the petiole Those characters enable us to separate *Z. simplex* from the other ten species by its cup shape transverse section in stem. One layer of stem epidermal cell covered with cuticle, followed by homogenous cortex either in some species, or heterogenous cortex in other species. also pith may be heterogenous in species, and homogenous of unlignified parenchyma in others. leaf or leaflet outline in cross section show high differentiation. Wavy, kidney, ovate and line margin. epidermal cell with stomata, covered with cuticle. Mesophyll composed of palisade and spongy tissue in all species except *Z. decumbens* and *Z. fabago* with mesophyll of only one type of parenchyma cells. Leaf vascular tissue is arranged either in straight line in *Z. decumbens* and *Z. fabago*, or in two whorls in the remainders. the inner whorl with only one main vascular bundles in: *Z. propinquum*; *Z. qatarense* and *Z. simplex*, the inner whorl with one main vascular bundle subtended by one to two subsidiary vascular bundles in: *Z. album*; *Z. boulosii*; *Z. mandavillei* and *Z. migahidii*, the inner whorl with five to seven separated vascular bundles in: *Z. coccineum* and *Z. hamiense*, while the outer whorl composed of number of subsidiary vascular bundles. Petiole in transverse cross section are either round to winged round, linear wavy, or ovate One layer epidermal cell covered with cuticle, followed. By mesophyll may homogenous in *Z. decumbens* and *Z. fabago* or heterogenous in the remainder. Petiole vascular bundles tissue arranged in two whorls the outer with number of vascular bundles, the inner whorl with two type: one main central vascular bundle in *Z. decumbens*; *Z. hamiense* *Z. migahidii*; *Z. fabago* and *Z. qatarense*, and one main central vascular bundle, associated with two peripheral vascular bundle *Z. album*; *Z. boulosii*; *Z. coccineum*; *Z. mandavillei* and *Z. propinquum*. According to all Those anatomical and morphological characters the artificial key explaining the difference between the eleven investigated Zygophyllum species.
- Supervisor** : د- ناهد مراد، د- فرج الغامدي
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