

identical species, are present as *J. polycarpus* K. Koch from north of Iran with two subspecies and an apparently new species from south part of the country. In this study some pollen and morphological characters measured and classified by cluster analysis based on Euclidean distance and using UPGMA program. *Juniperus polycarpus* can be distinguished from the mentioned probably new species by some features such as the diameter of ultimate branchlets, the colour of cones, leaves and top of branches and the pollen size, pore and sculptures.

### 525 Isozyme diversity and cryptic speciation in populations of *Juniperus excelsa* (Cupressaceae) complex in Iran

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The electrophoresis analysis was performed on 109 individuals from 11 *J. excelsa* complex populations collected from Iran. A total of 61 allozymes from five enzyme systems were recorded. The mean numbers of bands per presumed isozyme, ranged from 2-3.23. The value of Euclidean distance ranged from 1.920 to 4.411. The average value of  $H'$ , estimated for each population, ranged from 0.260 to 0.611. Similarly the average  $H'$  value for each enzyme system ranged from 0.031 for SOD-3 to 1.525 for PRX-2. To reveal relationship among these populations, cluster analysis based on Euclidean distance was performed with the Unweighted Pair Group Method using on Arithmetic average (UPGMA). Based on these data it seems that the populations from south of Iran should be referred to as a distinct cryptic species from *J. polycarpus* in the future. Northern populations are recognized as *J. polycarpus*, that is divided in two subspecies and finally it seems that there is no *J. excelsa* sample in Iran.

### 526 Revision On The Genus *Rumex L.* In Northeast Of Iran

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The *Rumex* genus belongs to *polygonaceae* family which has 200 species all over the world, 23 species in Iran and 10 species in Northeast of Iran. 3 species of this genus is only found in Iran; moreover, 12 hybrids of this genus has been reported in Iran, 3 hybrids out of these 12 are seen in Northeast of Iran. On the basis of morphological characters and by using valid flora resources, more than 100 herbarium specimens of the mentioned genus have been studied. These specimens were collected in Northeast of Iran and are now being kept in Ferdowsi University of Mashhad Herbarium (FUMH). The results of this study are: identifying all species of *Rumex* available in Northeast of Iran, introducing a new hybrid, reporting a new variety found in Iran and making some changes in subsidiary divisions of *R. tuberosus l.*

### 527 Taxonomic study on the genus *Lactuca (Asteraceae)* in Iran

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*Lactuca* is one of the most important genus the tribe of *Lactuceae (Asteraceae)*. There are 12 species in flora Iranica area and 10 species in different parts of Iran. *L. azerbaijanica*, *L. polyclada* are endemic to Iran and *L. aculeata*, *L. dissecta* and *L. wilhelmsiana* are rare species in Iran. The most important characters for determining of *Lactuca* species are: period of life, color and shape of achene, color of floret and ornamentation of seed coat (achene). Achene is variable in different species for example: long of rostrum, ornamentation the surface of achene, color, shape and long and wide of achene. One of the results of this work is identification keys for the species this genus based on having (or not having) rostrum in achene and based on this character *Lactuca* is distinguished from *Mulgedium*. Therefore *Lactuca tatarica* is synonym with *Mulgedium tataricum* that previously has been reported from Iran.

### 528 A Revision the genus *chondrilla (Asteraceae)* in Iran

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The genus *Chondrilla* belongs to tribe *Lactuceae (Chicoriae)* of the Liguliflora *Asteraceae*. 7 species have been reported in Flora Iranica area. *Ch. evae* & *Ch. mariae* are endemic to Afghanistan and *Ch. yossi* is endemic to Afghanistan and Pakistan and *Ch. canescens*, *Ch. maracandica* and *Ch. phaeocephala* are found in central Asia and Afghanistan. The most distribution of *Ch. juncea* is in Iran and its distribution in east borders is limited Iran's border is south of Turkmenistan and west of Afghanistan. All of herbarium specimens existed in TARI, IRAN, FUMH belong to the genus of *Chondrilla* are revised based on morphological characters for writing flora of Iran.

Based on this study *Ch. juncea* is the only species existed in Iran. This genus previously includes 3 varieties as namely: *juncea acantholepis* and *latifolia* based on having (or not having) setaceous hairs on involucre and shape of leaves. In flora Iranica these three var. are synonym but morphological studies show these varieties are maintained. Thus this varieties are added to the plants list of Iran. var. *juncea* haven't setaceous: hairs on the involucre is spite of var. *acantholepis* and var. *latifolia* has wide leaves and exist sometimes setaceous hairs on the some of involucre. Also a new variety is introduced by having long leaves and lacking setaceous hairs on involucre from NE- Iran.

### 529 Effects of Climate on Plant Biodiversity and Molecular Systematics

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Climate have a enormous effects on the biodiversity, distribution and plant covers at an areas. For this reasons, in different areas with different climates, different species with different distribution and plant coveration were formed. Underlying this phenotypic diversity is is a diversity of genetic blueprints, nucleic acids that specify phenotypes and direct theor development. Biodiversity is often used as a synonym for species diversity. There is a fundamental synergy between phenotypic and molecular evolution. Also, these have relationship between studies of molecular systematic and molecular evolution. Molecular systematic uses genetic markers to make inferences about population processes and phylogeny and in doing so creates a substantial comparative database for specific genes or proteins. Studies of molecular evolution use these data to evaluated rates, processes and constraints on molecular changes through time. The results of molecular evolutionary studies can then provide for more informed use molecular markers in population genetics and phylogenetic analysis.

### 530 Evaluation quality of Total phenols of *Equisetum telmatia Ehrh* extract in Tuska cheshmeh of Galugah in east of Mazandaran province

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*Equisetum telmatia Ehrh* is one of the most important medicinal herbs in North of Iran . It is wide distribution in moisture soil of forest road in many range of hight in this regions . It has been used by the rural healers in food or as an medicinal for treatment of nose bleed , internal bleeding , digestive systems , for treat of cold and flue with combination of *Adiantum capillus veneris* , anti aching , rheumatic pain for human and also for animals food.Result in this research showed that plant extract have secondary metabolits such as phenol and flavonoid , alkaloids and tannins compounds . With increase of hight in mountainus (1000m) the total phenols of aerial parts of plant were increased

### 531 Chemical variation in the essential oil of *Tanacetum polycephalum* Schutz-Bip

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The genus *Tanacetum* belong to the family Asteraceae is represented by 26 species in the flora of Iran, 12 of them are endemic. *Tanacetum polycephalum* Schultz-Bip is a taxonomically complex species, that is used in folk medicine to treat many disorders. Therefore determination of chemical camposition is very important. In this research, essential oil chemical camposition of *Tanacetum polycephalum* Schutz-Bip from 8 populations of protected region Lashgardar-Malayer was detemined byusing GC and GC/MS. Twenty seven compounds were identified in the oils and a relatively high variation in their contents was found. The main constituent of the essential oils were *p*-Cymene (0-16.5%), 1,8-Cineole (14.2-55.2%), Camphor (3.7-38.3%), Borneol (0-36.5%), *cis*-Chrysanthenyl acetate (0-19.9%), Bornyl acetate (0-20.1%), Davanone (0-7.7%) and Davanol acetate (0-9.3%). Variation of essential oils was subjected to cluster analysis and principal component analysis (PCA), and six different chemotype were identified. They were (1) 1,8-Cineole/Camphor, (2) 1,8-Cineole/Camphor/Bornyl acetate, (3) Camphor/1,8-Cineole/*p*-Cymene, (4) Champhor/ 1,8-Cineole/ Davanol acetate, (5) Borneol/*cis*-Crysanthenyl acetate and (6) Borneol/1,8-Cineole chemotypes.