

Study of Essential Oil Content and Composition of *Dracocephalum Kotschyi* in Different Stages of Plant Growth in Mazandaran Province¹Maryam Hassani, ²Mehdi Farahpour, ³Mohammad Mahdavi, ⁴Leila Hassani¹Msc Range management, Islamic Azad University, Nur Branch, Iran.²PHD Range management, Associate professor in Natural Resources Research, Iran.³PHD Range management, Assistant professor, Islamic Azad University, Nur Branch, Iran.⁴Msc Agricultural Economics, Invited Lecturer in Payamenoor University, Mahmoodabad Center, and Expert in Jihad Agricultural Organization in Mazandaran Province, Iran.Maryam Hassani, Mehdi Farahpour, Mohammad Mahdavi, Leila Hassani, Study of Essential Oil Content and Composition of *Dracocephalum Kotschyi* in Different Stages of Plant Growth in Mazandaran Province**ABSTRACT**

Herbs have a special place in drug treatment. In this study, the essential oils and composition in *Dracocephalum Kotschyi* province were studied at three habitats in Mazandaran province. Vegetation through field surveys and random sampling and transect - plot took. The essence of the shoots *Dracocephalum Kotschyi* in three habitats of Mazandaran collected. Compounds in the essential oil analysis chromatogram and average of *Dracocephalum Kotschyi* in studied areas by Pearson correlation coefficient was calculated using SPSS software. Results showed that the highest yields in the plant height of 2800 meters above the summer pastures. Also, Most of the isolated compound in Hezar Jrib area for alpha-pinene (23,73%) and the lowest percentage of silosifon (1 percent). This is while the highest combined in Gadok Savadkooh for alpha-pinene (22,16%) and the lowest percentage of trans oksidlimonen (1,12%) and in Balade Noor, the largest percentage of limonene (46,75%) and the lowest for cyclohexene compound (1,01 percent).

Key words: Essence, Mazandaran province, *Dracocephalum Kotschyi*.**Introduction**

Herb regional heritage with global importance, but they have an enormous wealth of the world. Medicinal plants refers to plants because the active ingredients in the treatment and secondary prevention of drug is used. Although the medicinal plants found in pastures compared to lower returns per unit area of forest land have, but given the wide diversity of these species are widespread and diverse rangelands, in this context, they are overwhelmed by the variety of unique products and low production area is high pastures, and they are economical to use. Thus, to identify habitats, ecological requirements, a collection of plant, ... including measures that should be done in the field of medicinal plants. *Dracocephalum kotschyi* is a Lamiaceae family and is one of our pharmaceutical. Due to the effect of treatment in reducing fever, joint pain and rheumatism. Traditionally it has been growing interest in the area has been used. Based on observations *Dracocephalum kotschyi* is very widely distributed in Mazandaran province. Knowledge and scientific research on this herb can help to treat diseases and disorders of the plant is used correctly.

However, research on the collection and identification of plant ecological research detailed knowledge of habitat conditions in the Caspian region and investment in the field of scientific and practical cultivation, breeding and processing plant provides. The compounds of the essential oil of this plant can be used. The multipurpose use of pasture management strategy for alternative livelihoods or income approach is economical for farmers. Also investigate how the different habitats of the plant extract qualitative and quantitative information can be substantial in terms of pasture, and the pharmaceutical industry can provide. Through which we can make an impact on the ecological characteristics of species composition *D.kotschyi* identified.

Chemical analysis of secondary chemicals in herbs began in the nineteenth century. The results showed that the herbs in addition to have general and basic compounds, they have a secondary active ingredient special. Since herbs are very effective in the world to feed and treat diseases of particular importance in this regard has been the extensive research.

Corresponding AuthorMaryam Hassani, Msc Range management, Islamic Azad University, Nur Branch, Iran.
Tel.: 00989111245647 E-mail: Hassani.2000@yahoo.com

Mirza and his group (1386) The identification of the chemical composition of essential oil of *Salvia* found that 34 plants were identified as 99/7% was accounted for by oil. The compounds were identified by combinations of Cyclozhrmakrindy (31/3%), alpha-pinene (13/2%), Sabyinn (11/7%) and beta-pinene (10/3%) was accounted for the highest values.

Gvydv Flamini et al (2005) study shows that the oil stachys aleuvites of Turkey stated that the main components of sesquiterpene hydrocarbons Btaciophilin (33/7%), no Syclojrmakrin (14/5%), and jermakrin-D January (6/9%), mono terpenes aLfapynn (8/4%).

Economic and empirical models:

With field surveys, study areas (three areas in mazandaran province) were examined. In order to measure vegetation in three regions, with Random sampling and Transect – Platt Was performed. The samples were obtained from the following equation. Formula (1):

$$N = \frac{t^2 \times s^2}{P^2 \times \bar{X}^2}$$

Where N = the minimum number of required samples, t = the Student's t table with the desired probability level (10%), x = mean of initial, P = estimated error of $\pm 0/1$ and S2 = variance is. To determine the maximum height of the active ingredient in the production of medicinal plants and essential oils, altitude 2000 meters to 2800 were selected using altimeter. plant samples were collected At the time of full flowering from three sites and 2,800 meters of aboveground plant parts (flowers, leaves and stems). After the aerial parts collected at the right time (before sunrise) ready for drying, and aboveground plant in the shade (not direct sun radiation) were dry. The samples were milled and Were sent to the laboratory for analysis.

Structural break:

Aim of this study was to identify the essential components of *Dracocephalum kotschy*, Determination of essential oil compounds in plant height and different habitats and compare the quantity and quality is essential. In order to achieve the research objectives, the following assumptions were tested:

- Percentage composition of the essential oil of *Dracocephalum kotschy* pasture condition varies.
- Percentage composition of essential oil *Dracocephalum kotschy* species in different habitats, different.

Decomposition Model:

Dracocephalum kotschy plants dispersion of Different habitats in the northern. the differences in habitat type has an impact on the quality and quantity of essential herbs. The quantity and quality of essential oil was also examined. What type of vegetation found in the area. Using chromatographic analysis of the obtained spectra, chemical compounds found in the essential oils of plants *Dracocephalum kotschy*.

Empirical results:

At first, Vegetation types in the study area was determined. The Hezar jirib is a one of tallest part in Behshahr city, it has an altitudes ranging between 2,000 and 2,900 m above sea level, with Western slope, southwestern slope and slop precedent is 20%. In this region, according to a survey this field and random plots, vegetation type, respectively. Approximately 57 species of plants found in the flora area, *Festuca ovina*, *Onobrychis cornuta*, *Thymus pubescens* as the dominant vegetation type. Based on the analysis of chromatograms and spectra obtained in a total of 88 compounds were identified in the essential oil. The highest percentage of combined alpha-pinene (23.73%) and the lowest percentage composition of the essential oils silosiphon (1 percent). The Gadok in Savadkooch is a summer pastures of central Alborz Mountains, with a maximum Height at 3251 m and 2205 m above sea level, with Western slope, southwestern slope and slop precedent is 13%. In this region, according to a survey this field and random plots, vegetation type, respectively. Approximately 54 species of plants found in the flora area, *Thymus pubescens*, *Teucrium polium*, *Festuca ovina* as the dominant vegetation type. Based on the analysis of chromatograms and spectra obtained in a total of 83 compounds were identified in the essential oil. The highest percentage of combined alpha-pinene (22.16%) and the lowest percentage composition of the essential oil of trans-limonene oxide (1.12 percent). The Baladeh in Noor City is the area with maximum height of 3215 m and at least 706 meters, with Western slope, southwestern slope and slop precedent is 22%. In this region, according to a survey this field and random plots, vegetation type, respectively. Approximately 58 species of plants found in the flora area, *Thymus falax*, *Festuca ovina*, *Astragalus microcephalus* as the dominant vegetation type. The highest percentage of combined limonene (46.75%) and the lowest percentage composition of the essential oil of cyclohexene (1.01 percent). According to Figure (1), Results of measurements of vegetation in the study area shows that the total canopy cover in Savadkooch, the percentage of bare soil in Behshahr and the percentage Of litter and gravel and stone in Baladeh are more.

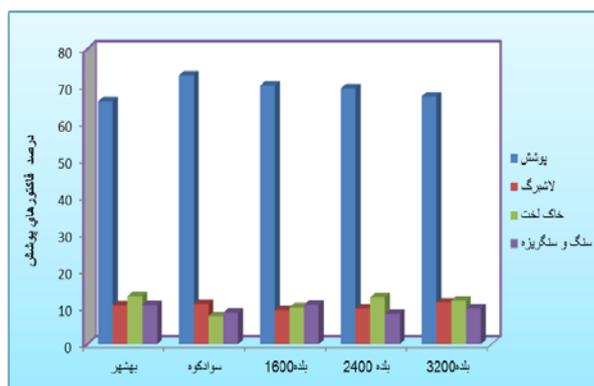


Fig. 1: Comparison of quantitative parameters measured in the three zones of vegetation.

Effect of sites on the percent composition of alpha-pinene, Sabinen, beta - pinene, beta - Myrsen, limonene, Terpynol, Syklopanten, Z - Sytral, cyclohexene, benzene, propanoic acid, Syclopripyzen, Aspatolnol and tri - cyclohexene at 1% level is significant. Alpha-pinene has fluctuated between 10.10 percent to 23.73 percent. And Comparison of means was done by Duncan, has divided into 3 groups and was significantly higher in the Hezarjarib. Sabyne between 0.50 to 2.87% and beta - pinene between 0.17 to 1.34 percent, Trpinol between 0.11 to 55, 0%, cyclohexene between 1.01 to 2.61% , benzene propanoic acid between 0.17 to 0.51 percent, Siclopropizolen between 0.08 to 1.87 percent Were variable. And mean comparison

showed that the most significant is Hezarjarib. Beta - Mirsen ranged between 0.61 to 0.65 percent, and limonene from 2.74 to 46.75 percent were variable. And mean comparison with methods of Duncan is showed that the most significant is Baladeh. Syklopanten combination between 0.30 to 1.75 percent, the combination Z - Sytral between 1.13 to 4.29 percent, acid Aktadyoek were varied 7.44 percent between 1.12 and Duncan's comparison method showed the Most of the compounds are Gadook and was significant. According to the results in Table(1), it is inferred that the highest percentage is related to limonene in Baladeh. And the minimum percentage is related to Sykloperopyzen in Gadook.

Table 1: Analysis of variance the impact of habitat on the Common and essential oil yield and composition of *Dracocephalum Kotschy*.

Source changes	Variable sources	F
Habitat	The yields	360.500**
	Alpha-pinene	65.938**
	Beta Myrsn	158.522**
	The cyclotron Jrmakrn	120.602**
	Beta-pinene	28.412**
	Alpha Trpynyvl	454.721**
	Zhrmakrn D.	185.371**
	Alpha Kadyndl	18.783*
	Dkanvyk hex acid	257.592**

**Significant differences at the level of 1%, and * significant difference at 5%

Source: research findings

Plant growth in many ecosystems and habitats, is affected by several factors, each of them can have a significant impact on the quantity and quality of plant products. Above sea level, is the important factor. Temperature variation of the height of the most important factors related to the height of the plant life. So by increasing or decreasing the height of factors such as temperature, relative humidity, wind speed, The amount of available water and the radiation dose, may be changed. Since the amount and quality ingredients in an herbal plant in different habitat and areas were changed due to fluctuations in plant metabolic activities affected by various environmental factors. So, The qualitative and quantitative distribution of the medicinal ingredients in different regions of the world will be different.

Based on the results of this study showed, yields produced in *Dracocephalum Kotschy* is most in baladeh and in Behshahr is the least.

Conclusion:

Essential oil of various species of plants in medicinal products, food and health, and its biological activity is dependent on the chemical composition of the essential oils. Studies showed that the Compounds present in this plant (*Dracocephalum Kotschy*) Difference is the Compared with the other three major constituents of plants have been reported in Iran. Based on the analysis of chromatograms and spectra obtained in a total of 45 compounds in the essential oils of plants in Baladeh, with combined

limonene (46.75 percent) and the highest and the cyclohexene (1.01 percent) had the lowest percentage of oil. However, in Behshahr area, 88 compounds were identified in the essential oil, that alpha-pinene with (23.73%) the highest percentage and Sylosyfon with (1 percent) the lowest percentage composition of the essential oils. And the amount of in Gadook is 83 combined, and the highest percentage of combined alpha-pinene (22.16%) and the lowest percentage composition of the essential oil of trans-limonene oxide (1.12 percent). As was noted, the combination of alpha - pinene as major compounds with the highest value the essential oil of this plant allcated, which have important properties and is widely used in various industries.

Based on the test results were accepted assumptions. As regards how to Dry Herbs are effective on quantity and quality of essential, so, It is suggested that the effect of different drying methods on the quality and quantity of the essential oil of the plant must be examined. It is also necessary Study and research in different parts of the plant essential oils and their comparison in terms of quality and quantity together.

And the right time to harvest the crop production is the highest level of active ingredient. Considering the diversity of existing compounds essence *Dracocephalum kotschyi*, The combined effect of the essential oil of the plant must be examined individually to determine which compound or compounds that inhibit the growth of micro-organisms are more.

References

1. Omid Beigi, R., 1379. Approaches to the production of herbs, Razavi Publications, Volume III, page 397.
2. Tajali, A. Amin, Gh. A. Gandomkar Tamhry, 1388. Identification of essential oil and camphor plant habitats at different phenological stages in Arak, Hamedan, Shahrekord, Iran Journal of Medicinal and Aromatic Plants Research, 3(2): 302-316.
3. Habibi, Z., M. Yousefi, 1388. Identification of essential components of the plant extract wad calling Slender, Iranian Journal of Medicinal and Aromatic Plants Research.
4. Mirza, M., Z. Bahrnyk, 1386, and identify the chemical composition of essential oil extracted from the plant *Salvia*, Iranian Journal of Medicinal and Aromatic Plants, 23(2): 278-284.
5. Guido, F. and groups, 2005. Essential oil of *Stachys aleurites* from Turkey, Biochemical Systematics and Ecology, 33: 61-66.