

Pharmaceutical analysis of Peucedanum Officinale L.

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Peucedanum officinale has been known as a medicinal plant since at least 17th century and features in the herbals of Nicholas Culpeper (in whose day it was more plentiful, for he records it as growing abundantly on Faversham marshes) and John Gerard. Culpepper records the additional common names hoar strange, hoar strong, (compare German "Haarstrang", meaning hog's tail) brim stone wort and sulphur wort. Essential oils smell great, reduce stress, treat fungal infections, and help you sleep. They are concentrated extractions from plants. A process called distillation turns the “essence” of a plant into a liquefied form for many medicinal and recreational uses. There’s a wide variety of essential oils available. Some are valued for their pleasing aroma. Others claim to have powerful healing properties. But their potency can have side effects, you must be aware of (1).

Peucedanum is a herbaceous perennial plant in the family Apiaceae found mainly in Central Europe and Southern Europe. Native to Southern Europe and Asia Minor, fennel is cultivated in temperate regions worldwide and is considered an invasive species in Australia and parts of the United States. All parts of the plant are aromatic and used in flavouring, and the bulblike stem base of Florence fennel (variety azoricum) and the blanched shoots are eaten as a vegetable. The essential oils of different Peucedanum species are composed of monoterpenes and sesquiterpene hydrocarbons, oxygenated sesquiterpenes, aliphatic alcohols, and esters. The seeds and extracted oil are suggestive of anise in aroma and taste and are used for scenting soaps and perfumes and for flavouring candies, liqueurs, medicines. Peucedanum is traditionally used as a vegetable in the East Asia region, but it is sometimes used as a medicine for headaches, colds, neuralgia, rheumatoid arthritis and other inflammatory diseases. P. japonicum has been reported to contain coumarins, phenolic compounds, chromones, polyacetylenes,

inositols and steroid glycosides. *P. japonicum* has anti-obesity , antiplatelet ,antiallergic , antioxidative and anti-inflammatory properties (2).

Methods and materials:

Peucedanum herb was collected in Aragatsotni province v.Byurkan, during the flowering period (May , 2021). The identification of plant was carried out at the Department of Pharmacognosy, plant herbs were deposited and are available at the Herbarium of the Institute of Botany, National Academy of Sciences of Armenia, Yerevan.

Crude drug in advance was prepared by the special technique based on "Microscopical examination technique" article, (NPh XIII, ex. 2, p. 277-285). Tendering hot method was used. The grounded seeds were boiled in 5% of alkaline (NaOH) for 5 minutes.

Then solution was removed and the raw material was washed and was left in the water. Soaked pieces of seeds were placed between subjective glass and cover glass. In advance water-glycerin mixture (1:1) drop was placed on top of the herb. Examination was carried out by Microscope ISOBASE EW10X/20 lens (3).

Extractible materials were organic, biological active, low molecular and secondary metabolic products. The fixing method for determination of quantitative constituents of biological active substances (Pharmacopea XIII,1.5.3.0006.15. ex II, 2015) was applied (4).

One gramm of raw material was added into 50ml of 50% alcohol solution. It was boiled for 30 min on water bath connected with condenser. After cooling, the mixture was filtrated, the amount of liquid extract was measured, then dried on water bath in porcelain bowl. Carefully collected powder of dry extract was weighted.

Just 3 grams of powdered plant was transferred to a weighing bottle. The sample was subjected to a temperature of 105° C for four hours followed by cooling in desiccators and weighted (Brazilian Pharmacopoeia V, 2010). Drying process was calculated from the point when the temperature in the drying shelf was 105 °C. The operation was repeated

twice, for 2 hours and 30 minutes. The results of three determinations are evaluated in terms of weight percentage on the sample amount using the equation (Pharmacopea XIII,1.5.3.00067.15. ex II, 2015).

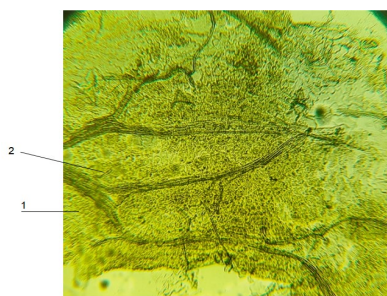
Three grams of the powder was transferred to porcelain crucibles which were previously calcined, cooled and weighed. The samples were charred in a muffle furnace at 450 °C for 6 hours. After cooling in a desiccator, they were weighed on an analytical scale. This procedure was repeated twice, for 4 hours and 2 hours. The amount of ash was calculated using Pharmacopeian methods. (Pharmacopea XIII,1.5.3.0006.15. ex II, 2015).

Results and discussion:

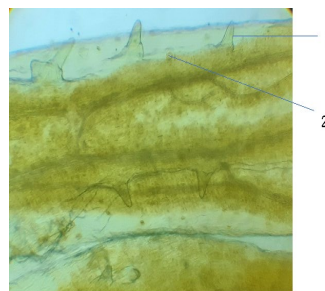
Identification of raw materials based on microscopical research is highly demandable in contemporary Pharmacognosy.

Pharmacognostic analysis. Particularly, more than two major distinguishing features are supposed to be identified in the microscopy fields. In order to obtain the objective evaluation of the main anatomical distinguishing features of raw material during the investigation *Peucedanum* herb was collected in flowering period.

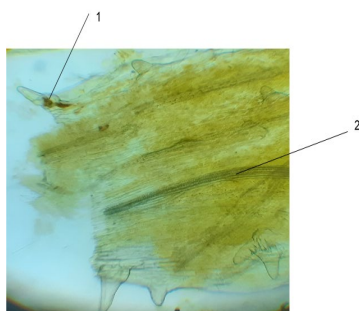
Peucedanum leaves microscopic slides are presented by the pictures 1 and 2.



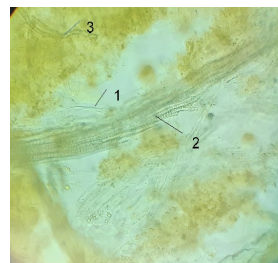
Picture 1. Upper surface of epidermis 1.Stomatas, 2. Simple trichomes.



Picture 2. Upper surface of epidermis. 1.Con shape trichomes, 2. Simple trichomes.



Picture 3. 1.Essential oil containing simple trichome. 2. Vessels of conductive tissue.



Picture 4. 1.Simple trichome. 2. Ring shape,spiral vessels of xylem, 3. Simple multicellular trichome.

Microscopical examination of upper surface of leave showed existence of epidermal cells with sinuous sidewalls, especially on the underside. Simple hairs were noticeable in small number. Conical hairs were well visible with their base (attachment) cells and in some places were noticeable few glandular hairs. Drops of dark essential oil are sometimes noticeable in conical hairs. Xylem vessels of the conductive system were well visible. Epidermal mesophyll cells with thick walls and containing small prism crystals of calcium oxalate were identified.

Table 1 Commodity indicators of Peuceanum (% , $\bar{X} \pm S_E$)

<i>Commodity indicators</i>	<i>Extractable matter</i>	<i>Total ash</i>	<i>Moisure</i>
<i>Dry raw material</i>	$5.2 \pm 0,05$	$12.84\% \pm 0,02$	$13.58\% \pm 0,12$

Conclusions

- Anatomical - distinctive features of Peucedanum Officinale L. raw material of the Armenian flora have been revealed and the plant species were identified.

- Within the framework of preliminary standardization, commodity indicators of raw material were approved: total ash $12.84 \pm 0.02\%$, humidity $13.58 \pm 0.12\%$.
- Alcohol extract from medicinal raw materials contains 5.2 % of extractible matter.

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