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STUDIES OF THE POSSIBILITY TO VALORISE SOME EXTRACTS WITH ALELOPAT AND ANTINEOPLASTIC POTENTIAL FROM *Aristolochia clematitis* (BIRTHWORT)

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Abstract

Interest in medicinal plants has increased with improving extraction and processing techniques of active products and especially with demonstrating their effectiveness in combating serious human diseases. The paper presents the way of determining chlorophyll pigments, NPK chemical compounds, obtaining a tincture; external application in order to fight against an illness or to heal wounds and their effects on the human organism are studied separately.
Its valorisation requires however extensive research to scientifically substantiate such a remedy, which ultimately transforms it from a popular remedy in a drug that is grown to serve medicine. Aristolochia clematitis L., (Birthwort) is a species of herbaceous, perennial, gabbros and smelly plant that grows in cultivated areas and bushes. This weed is one of the most powerful herbs in our flora, with many applications. The toxicity of this plant is mainly due to the aristolochic acid which is a powerful carcinogen, but also due to other compounds (De Broe ME "exposure to aristolochic acid A, being a powerful nephrotoxin") existing in the plant require studying regarding the possibility of being used with therapeutic purposes.
This is the reason why chlorophyll pigments have been determined which differ from plant to plant according to where the plant grows and its liveliness, the presence of certain chemical compounds, NPK content. Moreover, we also study the soil where the plants are harvested which is highly important for their development.

Key words: *Aristolochia Clematitis; argic cernoziom soil; Clorofilieni pigments; Hummus.*

INTRODUCTION

Since Aristolochia Clematitis is a very toxic plant which is used in folk remedies, there are more and more debates which aim at restoring it in the cult medicine for various treatments (Grollman, Arthur P "Aristolochic acid is a powerful carcinogen which is naturally present in Aristolochia (Wol Apple").
Successful folk remedies started from reducing inflammations, external haemorrhoids, anal fissures, eczemas, ovarian cysts, uterine fibroids, virginities, anal fissures, dermatoses, ulceration infections, wounds which are hard to heal, burns, mammal cysts, varicose ulcer, psoriasis. It is recognised as a good antiseptic, cicatrising, calming and anti-inflammatory. Beneficial effects are obtained by using young seeds, leaves, roots and stems in various proportions and different extracts (W. F. Balistreri, H. H. A-Kader, et al ,"in order to identify distribution and concentration of active compounds".
Aristolochia Clematitis contains an acid complex, especially aristolochic acid which, if used with a correct concentration, it stimulates the activity of white cells in the blood, while helping to heal wounds. It is safe to use this plant externally. (A. Hostage, M. Staiger, K. Haag, W. Gerok, Klin Wochenschr "concentrations have been suggested in order to provide a simple guide to the level of severity in an illness").
Since most of the active principles present in the Aristolochia Clematitis plant are already known, the paper presents a series of determinations which aim at complementing studies on the beneficial effects of the plant and makes an analysis of the results obtained for each studied organ of the plant (young leaves and stems).

MATERIALS AND METHODS

Aristolochia Clematitis or Wolf apple, from Busu village, Dolj district, South-West Oltenia, has been used, a plant adapted to the soils and climate of our country. Since it is a hillside, it is mainly present on all lands which have been left uncultivated, vineyards and orchards, on roadsides, woods and gardens.

Studies and researches were performed in 2012, where three different locations were taken into consideration, where Aristolochia Clematitis is frequently present, from three different places, and soil and plant, young leaves and stems analyses were performed by using spectrophotometric determinations for soil and plant and the chlorophyll pigments method for the plant.

Soil and plant samples were collected during 12-20 June 2012 when the plants were blossoming, as follows:

- from a plantation of vineyards located on an argic cernoziom soil (clay illuviation soil);
- from a vacant land, coved with spontaneous vegetation, with Northern exposition located on the hill near Busu village, with argic cernoziom soil (clay illuviation soil);
- near the woods with S-E exposition, cu Typical phaeozem soil (brown clay illuviation soil).

RESULTS AND DISCUSSIONS

The tables below present the performed analyses and obtained results:

Table 1. Determining chemical properties of argic cernoziom harvested from the vineyard 20 cm deep

No sample.	pH	Nt	P_2O5	K_2O	Ah	SB	Hummus
1.	6.15	0.191	4.1	11.5	2.71	16.8	2.16
2.	6.34	0.224	5.4	21.4	1.80	19.4	2.19
3.	6.46	0.21	5.2	14.8	2.16	19.2	2.14
4.	6.20	0.211	4.2	16.9	2.76	16.8	2.21
5.	6.25	0.216	3.8	17.5	2.14	18.0	2.24
6.	6.18	0.188	5.5	16.6	3.60	15.5	2.19

Table 2. Determining chemical properties of argic cernoziom harvested from a vacant land located on a hill 20 cm deep

No sample.	pH	Nt	P_2O5	K_2O	Ah	SB	Hummus
1.	6.01	0.077	6.3	6.2	1.31	5.2	0.53
2.	5.98	0.083	4.7	10.7	1.52	5.2	0.62
3.	5.88	0.064	5.5	7.00	1.21	5.2	0.67
4.	5.75	0.090	6.7	9.5	1.57	6.4	0.72
5.	6.00	0.095	7.6	10.7	1.49	6.0	0.57
6.	6.02	0.082	7.9	9.5	1.45	5.2	0.48

Table 3. Determining chemical properties of soil near Typical phaeozem woods (brown clay illuviation soil) 20 cm deep

No sample.	pH	Nt	P_2O5	K_2O	Ah	SB	Hummus
1.	6.20	0.055	7.6	8.0	1.26	5.2	0.67
2.	6.21	0.052	6.5	8.0	1.12	6.0	0.43
3.	6.13	0.050	8.1	9.5	1.31	5.6	0.67
4.	6.18	1.102	5.7	8.0	1.17	5.2	0.53
5.	6.17	0.077	6.6	9.5	1.22	5.6	0.48
6.	6.10	0.078	6.1	7.1	1.31	5.6	0.53

Table 4. Determining chlorophyll pigments and NPK from *Aristolochia clematitis* young leaves and stems harvested from the vineyard

No sample.	Clorofilieni pigments						N		P_2O5		K_2O	
	Chlorophyll A		Chlorophyll B		Carotene							
	leaf	stems	leaf	stems	leaf	stems	leaf	stems	leaf	stems	leaf	stems
1.	10.725	10.421	4.845	4.812	4.925	4.838	3.10	3.07	1.85	1.80	1.58	1.35
2.	10.827	10.487	5.110	5.101	4.835	4.815	3.85	3.43	2.05	2.01	1.65	1.51
3.	10.835	10.487	5.115	5.102	4.841	4.821	3.90	3.49	2.01	1.89	1.67	1.53
4.	10.730	10.420	4.846	4.813	4.927	4.847	3.08	3.00	1.83	1.78	1.54	1.34
5.	10.732	10.420	4.847	4.813	4.930	4.848	3.14	3.10	1.87	1.80	1.62	1.46
6.	10.726	10.419	4.840	4.812	4.928	4.847	3.05	2.98	1.85	1.78	1.59	1.38

Table 5. Determining chlorophyll pigments and NPK from *Aristolochia clematitis* young leaves and stems harvested from the vacant land located on the hill

No sample	Clorofilieni pigments						N		P_2O5		K_2O	
	Chlorophyll A		Chlorophyll B		Carotene							
	leaf	stems	leaf	stems	leaf	stems	leaf	stems	leaf	stems	leaf	stems
1.	9.860	9.831	3.980	3.942	3.361	3.321	3.01	2.87	1.75	1.54	1.30	1.23
2.	9.865	9.833	3.983	3.943	3.365	3.323	3.05	2.94	1.70	1.50	1.31	1.23
3.	9.920	9.902	4.010	4.003	3.618	3.324	2.75	2.35	1.65	1.52	1.27	1.18
4.	9.835	9.805	3.985	3.934	3.650	3.18	3.00	2.85	1.72	1.51	1.35	1.15
5.	9.861	9.832	3.987	3.935	3.645	3.17	3.02	2.87	1.69	1.50	1.32	1.13
6.	9.855	9.816	3.975	3.967	3.360	3.327	3.85	3.56	1.70	1.50	1.29	1.20

Table 6. Determining chlorophyll pigments and NPK from *Aristolochia clematitis* young leaves and stems harvested from the land near the woods

No sample	Clorofilieni pigments						N		P_2O5		K_2O	
	Chlorophyll A		Chlorophyll B		Carotene							
	leaf	stems	leaf	stems	leaf	stems	leaf	stems	leaf	stems	leaf	stems
1.	10.613	10.335	4.720	4.615	3.960	3.925	3.11	3.07	1.97	1.65	1.64	1.42
2.	10.615	10.335	4.728	4.620	3.965	3.927	3.08	3.01	1.90	1.60	1.64	1.42
3.	10.720	10.410	4.830	4.657	4.915	4.890	2.89	2.47	1.75	1.45	1.49	1.25
4.	10.585	10.470	4.721	4.685	4.966	4.895	3.04	2.95	1.82	1.60	1.60	1.40
5.	10.618	10.515	4.735	4.610	4.956	4.895	3.01	2.87	1.79	1.62	1.53	1.37
6.	10.610	10.513	4.710	4.614	4.950	4.893	2.83	2.55	1.68	1.35	1.35	1.20

Figure 1. Determining chlorophyll pigments

Based on the presented information, we identified and characterised chemical properties with therapeutic values extracted from Aristolochia Clematitis, from the two vegetative organs, young leaves and stems, studying the ones harvested in the vineyard with the best results at performed analyses and we prepared a tincture from leaves and another one from stems.

Loose, which we chopped finely by cutting with scissors, pressed in a mortar until we obtained a uniform paste. The obtained paste was transferred in a bowl with glass stopper and we added 96^0 ethylic alcohol until we

covered the preparation, and then we closed it tightly. The obtained mixture was periodically stirred and was left to soak for 15 days.

We applied the same procedure to (AC) harvested stems. After soaking, the resulting liquids were filtrated filter paper resulting in a clear green liquid.

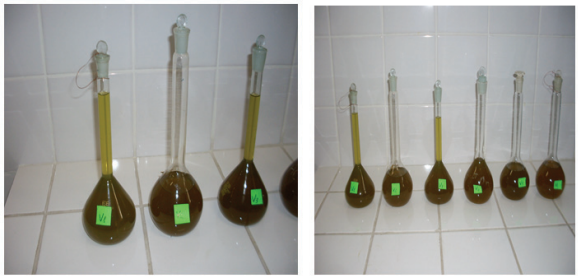

Figure 2. Preparing *Aristolochia clematitis* tincture in a laboratory

Next step consists of gas-chromatography analysis (GC-FID) and gas-chromatography mass spectrometry (GC/MS). The methods will be applied in order to characterise the tincture prepared from this plant and to make a comparison between the alcoholic extracts from stems and leaves.

Based on the obtained results from the two methods, continuing research is proposed by external application of the analysed tincture in treating certain illnesses under the supervision of specialists in medical and pharmaceutical field.

CONCLUSIONS

By using the spectrophotometer method, we were able to determine N, P_2O5, K_2O in leaves and stems, and the method of determining chlorophyll pigments led to identifying Chlorophyll A, Chlorophyll B, Carotene.

The presence of Aristolochia Clematitis components differs from a plant to another, from a place of harvesting to another, from a vegetative organ to another.

The presence of determinate elements in leaves and stem differs in value according to the place where the plant developed, type of soil and chemical properties respectively.

The obtained results as a whole from Aristolochia Clematitis harvested in the vineyard are emphasised, where the analyses of soil samples resulted from the presence of chemical fertilisers, as well as the effect of mechanical works which influence the physical properties of the soil.

Aristolochia Clematitis therapeutic potential can be obtained only by establishing the vegetative organ with the highest content of active principles in order to extend and harness them into different forms of pharmaceutical preparations.

By preventing intoxication with Aristolochia Clematitis, it is highly recommended only for external use. It can be used only under medical supervision.

It is not recommended that this tincture be prepared in household, where you do not have the possibility to establish the number of toxins present in the harvested plant, because these can vary greatly according to the time of harvesting, the land where it was grown, the parts of the plant which are used and also the stage of vegetation.

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