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JUNE 4-9, 2017

Living in a global world:

local knowledge and sustainability

Book of abstracts

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SOCIETY FOR ECONOMIC BOTANY

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Guided wild plant tours and their contributions to the cultural transmission of knowledge in the city of Vienna (Austria).

Presenter: Hanna Grossauer (Julia F. Morton Award)

Authors: Grossauer, Hanna [1], Schunko, Christoph [1], Vogl, Christian [1].

During the 20th century, plant gathering activities decreased due to diverse socio-economic changes, leading to a decline of cultural transmission of knowledge. However, there can also be seen an increased interest in wild plants, reflected by media reports and publications of scientific and popular science. Also in the urban context, gathering is rediscovered in connection with a changing understanding of urban green space functionality, modern lifestyles and new trends in nutrition and self-medication and knowledge gets transmitted through different organized events such as guided tours, workshops, seminars and trainings. The intention of this study was to understand how guided tours on wild plants contribute to the cultural transmission of knowledge about wild plant gathering in urban areas. The transmission of knowledge during five tours in Vienna in autumn 2015 was investigated. Data was collected using participant observation during the tours, structured questionnaires (convenience sampling: 35 excursion participants) and biographical time-line interviews (purposive sampling: 4 guides and 6 participants). Data was analyzed using Spearman's rank correlation coefficient and content analysis. During the five tours, information on 64 plants and their possible applications as food and medicine but also natural cosmetic, custom and construction material was given. The participants were informed about botanical characteristics and distinctive features of plant species and families, suitable gathering spaces and sustainable gathering practices. Knowledge was transmitted by interactively involving the participants and appealing different senses, including plant identification, tastings and simple processing. The informants derive knowledge on wild plants from various sources. Informants, who received practical knowledge within their families, already gathered wild plants as a child and were also predominantly performing gathering activities within the last 3 years. In accordance to this, participants value practical learning, which is provided during guided tours especially for gaining safety in species identification and thereby being able to perform gathering activities. Excursions on wild plants are a comparably new form of knowledge transmission that might contribute to the revaluation of gathering practices in urban areas by providing practical, interactive learning and the exchange of local knowledge on urban gathering.

Keywords: Ethnobotany, Local ecological knowledge, Knowledge sources, Cultural transmission of knowledge, Wild plant gathering, Foraging, Urban non timber forest products.

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Humulus lupulus L. analysis and comparison of volatile of spontaneous and commercial varieties: phytotherapeutic potentialities.

Presenter: Hugo Goes

Authors: Goes, Hugo [1], Sousa, Maria João [1], Pedro, Luis [2].

Humulus lupulus L. is a species in the Cannabaceae family. Hop, as it is commonly known, is a perennial, dioecious and normally diploid (2n = 20) herbaceous plant [1]. It is in beer production that hops have their greatest economic value at the international level. Due to the production of compounds with bactericidal action, in particular against Gram-negative bacteria, the hops came to solve problems related to the conservation of beer [2]. In addition Hops contain compounds that confer sedative, diuretic and antiarthritic properties [3]. In the ethnobotanical use, the dried flowers were used in pillows called "hop pads", to combat insomnia [4]. The use of dried and green hop inflorescences for diuretic uses and disorders of the digestive tract, were verified in the Montesinho park area [5]. In China, alcoholic extracts of hops were used to treat leprosy, tuberculosis and dysentery [2]. Its use in infusions as a tonic, since the middle Ages where it considered a medicinal herb [6]. The results obtained show a certain similarity in the monoterpene component, with β-myrcene as the major compound (more than 64% in cultivar and spontaneous samples) and notorious differences in the sesquiterpene component, evident in cases of α-humulene (12% in cultivars, 0.2% and in spontaneous) and trans-β-farnesene (not detected in cultivars, 9% in spontaneous). Also important is the richness of the sesquiterpene component in spontaneous clone, in particular in the oxygenated compounds. This profile, of both cultivar and spontaneous, shows potential for antiseptic effects in the digestive tract, especially when these are associated with bacteria such as *Helicobacter pylori* [7], which will be in agreement with ethnobotanical uses of Hop. Since there is spontaneous hops in a large part of Portugal, the collection and analysis of the aromas of these hops may lead to the development of new and more fragrances, with interest in different areas, like beer production or cosmetics. The volatile components extracted from spontaneous hops collected in the Bragança area were analyzed and compared with those of commercial varieties.

Keywords: *Humulus lupulus* L., Hop, Medicinal, Monoterpene, Sesquiterpene, *Helicobacter pylori*, Volatile.

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Humulus lupulus L. analysis and comparison of Volatile of spontaneous and commercial varieties: phytotherapeutic potentialities

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Introduction

Humulus lupulus L. is a species of the Cannabaceae family. Hop, as it is commonly known, is a perennial, dioecious and normally diploid (2n = 20) herbaceous plant [1]. It is in the beer production that hops have their greatest economic value at the international level. Hop can be seen as a medicinal plant with an array of uses, from the antibacterial compouds for beer conservation [2] to sedative, diuretic and antiarthritic properties [3].

Material and Methods

The spontaneous material was collected from areas of Bragança district. The cultivars were collected from producers fields. The female flowers were used to perform a Likens-Nickerson extraction of the volatile compounds and then analized in GC and GC-MS.

Figure1:female flower Hop, Amplified 10x

Figure 2: Hop plant in a Hop garden

Results

The results obtained show a certain similarity in the monoterpene component, with β-myrcene as the major compound (more than 64% in cultivar and spontaneous samples) and notorious differences in the sesquiterpene component, evident in cases of α-humulene (12% in cultivars, 0.2% and in spontaneous) and *trans*-β-farnesene (not detected in cultivars, 9% in spontaneous). Also important, is the richness of the sesquiterpene group in spontaneous clone, in particular in the oxygenated compounds. This profile, of both cultivar and spontaneous, shows potential for antiseptic effects in the digestive tract, especially when these are associated with bacteria such as *Helicobacter pylor*i [4], which will be in agreement with ethnobotanical uses of Hop.

Table 1. Composition of the volatile fraction from samples of *Humulus lupulus*

Compostos	RI	Nugget flower	Sample 3	Cascate	Chinouke
Isobutyl isobutyrate	909	0.1			
Methyl hexanoate	914		t		
α-Pinene	930	0.2	0.2		
Camphene	938	t	t		
β-Pinene	963	1,0	0.7	0.8	0.8
β-Myrcene	975	74.8	64.4	67.5	61.3
α-Phellandrene	995	t			
Isoamyl isobutyrate	999	0.2			
β-Phellandrene	1005	0.3	0.2	0.3	
Limoneno	1009	0.3	0.2	0.2	0.2
cis-β-Ocimene	1017	0.1			
trans-β-Ocimene	1027	0.3		0.1	
γ-Terpinene	1035	t			
2-Nonanone	1058		0.7		
Nonanal	1073	t	0.2		
Linalool	1074	0.3	0.7	0.5	0.3
Methyl octanoate	1105	0.2	0.2		0.1
Hexyl isobutyrate	1127	t			
α-Terpineol	1159	t			
2-Decanone	1166		0.5		
Methyl nonanoate	1205	0.1	0.1		
Heptyl isobutyrate	1233	t			
2-Undecanone	1275	0.2	2.2	1.3	
Methyl decanoate	1314	0.1	t		
α-Ylangene	1371	0.1			0.1
α-Copaene	1375	0.1	t		0.3
2-Dodecanone	1389	t	0.3		
β-Caryophyllene	1414	3.5	1.5	3,0	6.2
β-Copaene	1426	0.1		0.1	0.5
Aromadendrene	1428		0.4		
α-Humulene	1447	12.1	0.2	4.9	12.5
trans-β-Farnesene	1455		8.5	6.4	
trans-Cadina-1(6),4-diene	1469	0.1			
γ-Muurolene	1469	0.2	0.6	0.4	1.1
β-Selinene	1476		1.7		0.6
Valencene	1484		2.2		
Viridiflorene	1487		t		
γ-Cadinene	1500	0.3	0.2	0.4	1.1
7-epi-α-Selinene	1500		0.2		
δ-Cadinene	1505	0.5		0.3	1.6
α-Calacorene	1525	t			
α-Cadinene	1529	t			
Germacrene B	1533		1.1		0.7
β-Caryophyllene oxide	1561		0.2		0.1
Viridiflorol	1569		0.2		
γ-Eudesmol	1609		0.2		
T-Cadinol	1616		0.2		0.3
β-Eudesmol	1620		0.6		
Intermedeol	1626		0.3		
α-Eudesmol	1634		0.7		
% Identification		95.2	89.6	93.9	81.6
Grouped compounds					
Monoterpene hydrocarbons		77,0	65.7	75.6	38.8
Oxygen-containing Monoterpenes		0.3	0.7	0.3	0.2
Sesquiterpene hydrocarbons		17,0	16.6	17.7	41.6
Oxygen-containing Sesquiterpenes		t	2.4	0,0	0.9
Others		0.9	4.2	0.3	0.2

RI - Retention index relative to *n*-alkanes C_9-C_{17}; t - trace amount (<0.05%)

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