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**Abstract:** In the medicinal plants' names five information-processing channels (vision, touch, smell, taste and hearing) are distinctly traced. In different languages, the frequency of these channels varies, but the priority belongs to vision, which allows to describe the outlook of the plant and to localize it in space. Thanks to the tactile information-processing channel, we can characterize such properties of the plant's surface, as smoothness, elasticity, humidity, oiliness, etc. The peculiar feature of the given group of vocabulary is a combination in the plant's name the data obtained via different channels.

**Key words:** cognitive linguistics, stages of human cognitive activity, medicinal plants, information-processing channels, touch, tactile attributes.

### Introduction

Literary and common names of medicinal plants (MP) have been chosen as the object of the research due to the large role played by the plants in general and herbs in particular in everyday human life. This lexicon is linked to the culture of the peoples and reflects the peculiarities of national consciousness (Панасенко 2006). However, to show this national identity and to set its characteristics we cannot be limited only to the description of one language; we make a comparative analysis of the Romance, Germanic and Slavic languages.

The results of my research (Панасенко 2010) show that in the vocabulary of the languages under consideration MP names form a special layer, which has a long history of its development, somewhat looking like a particular term system united by its content. The specificity of this layer is a set of names, which are synonyms to one referent. In one language there may be more than one hundred common names belonging to different layer of the vocabulary (colloquial, dialectal, archaic, etc.) identifying the same plant (Панасенко 2007).

MP names have been traditionally analyzed from semantic and structural point of view. In my research, I have combined traditional approach with onomasiological and cognitive methods. Here I present results of cognitive analysis, which reflects stages of human cognitive activity, information-processing channels and their combinations, which can be found in MP names.

## 1. Language units from cognitive point of view

Cognitive science or cogitology has resulted from the researches undertaken by philosophers, psychologists, physiologists, mathematicians and linguists whose objective was to establish how goes the process of perception of the information, its processing, storage, transformation and structuring.

Cognitive linguistics takes interest in all the displays of human speech and language behaviour (the communicative act, writing, reading, and translation). The person has verbal and nonverbal knowledge received by sensory and communicative channels. Verbalized knowledge forms the linguistic world view and is the research object of cognitive linguistics.

Human perceptive and designation activities are closely interconnected. We derive it from the fact that object names, especially referential ones, include in their nominative content not only concepts, but also elements of a sensual stage of knowledge: visual, acoustic and spatial concepts of things and subject matters (Языковая номинация, 1977: 16).

Psychologists (Ананьев 1961; Bryant and Raz 1975; Pick et al., 1966) have carried out multi-aspect research of the human perceptive activity, as a result of which it has been established how the image about a physical basis of an object is shaped. At first, the person isolates the properties describing spatial and temporary properties of macroobjects, as well as features of their movement. These spatial properties (form, area, volume, length, direction, etc.) are combined with duration, size, speed, acceleration, rhythm of movement, etc. The following stage is the selection of those integral properties of subject matters in which their nature as continuous macroscopic objects is embodied. Here belong such basic properties of material bodies, as hardness, softness, elasticity, plasticity, flexibility, smoothness, roughness, etc. (Ананьев, Веккер и др., 1959: 54-57).

The analysis of language units from the positions of cognitive linguistics assumes not only revealing ways of verbalized information storage. We may also speak about the stages of human cognitive activity and information-processing channels, which are reflected in our language material.

## 2. Language material

As far as I have a large number of examples in many languages, I find it necessary to explain how I present them. First of all, I differentiate herbaceous medicinal plants (HMP) and medicinal plants-shrubs (MPSH). Then I differentiate botanical names (which I give in Latin) and literary names, usually included into dictionaries and known to many people, like *Poppy* or *Chamomile* and common (folk) names. To show the difference between them I mark all the examples, which are in italics, with "lit." for literary names; the rest of examples are common ones, which prevail.

Most of examples are accompanied by their translation into English in angle brackets and by the scientific botanical name of the plant in round brackets, e.g. French lit. *Épine-Vinette commune* /épine – thorn/ – European barberry (*Berberis vulgaris* L.), common *Épine de cerf* – Common buckthorn (*Rhamnus cathartica* L.); Russian lit. *Стальник пашенный* /сталь – steel/, Ukrainian *Стальник* – Field restharrow (*Ononis arvensis* L.). Translation may also include full or abridged comments: *contorted*, *dial.* – dialectical, *arch.* – archaic, etc. The sequence of languages is the following one: Romance (French), Germanic (German and English), Slavic (Russian, Ukrainian, Polish, Czech, and Slovak). In some languages, a plant's name is written in capital letters, in others – in small. Taking into account strict rules of the structure of the botanical term, which is always double with the first element denoting the generic name in a capital letter and a specific synonym coming after it in a small letter, I write in all the languages under consideration (except German) the first element of the plant's name in a capital letter.

The article presents results of cognitive analysis of 55 HMP (total number of examples 191) and 14 MPSH (total number of examples 103).

## 3. Stages of human cognitive activity

The analysis of language units from cognitive linguistics positions assumes not only identification of ways of verbalized information storage. The stages of sensual knowledge of the world are also reflected in language. Results of my research (Панасенко 2010; Panasenko 2011) show that in phytonyms' semantics information-processing channels are vividly reflected as well as concomitant to them four stages of its processing, related to the perceptible stage of cognition. In my opinion, there are universal ways of data accessing,

which can be named primary. **Primary information**, as the reference point of human cognitive activity assumes a number of the special procedures of analysis. To describe the plant thoroughly, it is necessary to know where it grows, time and duration of its flowering, the used part, efficiency of treatment and many other things.

A man receives primary information mainly by vision at some distance from the plant, which enables him to define form, colour and size of the plant, time and flowering duration. In case the plant has specific strong smell the olfactory channel can become the basic source of its designation (Панасенко 1998), e.g.: *Sweet scented squinacy* – Woodruff (*Asperula odorata* L.); Russian *Душица* – Oregano (*Origanum vulgare* L.).

The next, the second stage of human cognitive activity represents **information processing**. It concerns information received at a close distance or during a direct contact with the plant and further use of it. In this case, visual and olfactory channels are involved. Processing of information supposes, foremost, comparison of plants, implying discovery of likeness in a due form, original appearance, features of structure, etc., with the known objects or plants. Finally, the smell of the plant, its used part, useful and medical properties are identified in the total. The direct contact with the plant activates tactile receptors; it allows defining such physical properties of the plant, as texture of the surface (roughness, smoothness, silkiness and so forth); the use of a MP internally enables to determine its taste.

Information processing about a plant can be completed, however it may be continued, because additional information is involved. During processing of information about a new MP a man usually involves background knowledge, which has **cultural specific value**. Actually, it is the aspect of the second stage of human cognitive activity, but as such information is very important for us, we mark it out in a separate stage, the third one, which is based not on the biologic life of the subject, but on the social one.

The fourth, the last stage of human cognitive activity is the **final estimation** (useful plant's properties, its physical features, efficiency of its application, possibility of its use not only in the medical purposes, but also in everyday life and some others). This stage is complicated and important either, because on its basis a plant can be attributed to the certain class: medicinal, poisonous, edible, technical, etc.

#### 4. Information-processing channels

As it has been already mentioned, the information about the world comes via sensory and communication channels. However, the perception of the world by a person is amounted not only to five perceptual modi, but also by the regularities of the language, which describes these modi.

The basic information-processing channels are vision, touch, smell, taste and hearing. In our language material, they have a various degree of rate.

Priority position in all the languages under considerations occupies vision. Thanks to vision we can describe such plant's properties, as **size** (large/small), **shape**: (usual/unusual, resembling known object, resembling known plant, connected with known phenomenon); **colour** (monochromatics/colour combinations; intensity – light/dark); **place of growing** (wood, field, mountain, sea); **time of blossoming, time of collection**, etc. Thanks to smell we can identify plant's fragrance (presence/absence; pleasant/unpleasant). Thanks to touch it is possible to examine the texture of the whole plant or its part – leaf, trunk, root, etc. (smooth/rough/thorny/velvet). Thanks to taste we can find out if the plant or its part is bitter/sweet/sour/salty. We have few examples connected with hearing because of the specificity of our language material, e.g.: Russian *Писклец* /пищать – to squeak/ – Pheasant's eye (*Adonis vernalis* L.); *Щелкунец* /щелкать – to click/ – Greater celandine (*Chelidonium majus* L.); Czech *Piskačky* – Sweet flag (*Acorus calamus* L.).

#### 5. Peculiarities of tactile perception

The touch phenomena are diverse, as the structure of tactile perception is diverse. Tactile and temperature sensations arise at the direct interaction of an external cover of a human body with external objects and phenomena. I. M. Setchenov named touch "the feeling parallel to vision", being based on the all-round comparative analysis of vision and touch. The interrelation of vision and touch is one of the basic moments of directly sensual reflection of the objective reality by the person (Ананьев, Веккер и др., 1959: 7). This interrelation is caused by the hand fingers movement which palpate the object of the reality. By the palpation which actively specifies various properties of external bodies (their texture, elasticity, hardness, state, form, size and various spatial features), the person distinguishes these

features, reflects them in tactile images (perceptions and representations) (Ананьев, Веккер и др. 1959: 17).

From numerous definitions of touch we consider good the following one: "Touch is a complex of various kinds of sensations, each of which has own receptor bodies: tactile (touch and pressure), temperature, partially-painful, and also muscular-sensual" (Ананьев, Веккер и др., 1959: 10).

Stages of tactile activity of a person have been investigated by psychologists (Ананьев, Веккер и др., 1959; Pick et al., 1966; Gordon and Gordon 1978; Lederman 1979; Bolanowski 1996; Morley 1998; Gescheider et al., 2004) and as a result there have been drawn conclusions on a priority of the channel of vision. This very important conclusion is also reflected in phytonymic lexicon.

By means of skin reception the person learns a wide range of object qualities: smoothness, elasticity, humidity, oiliness, etc. Subjective images of these substances can be not always presented as varieties of elementary skin sensations: touch, pressure, heat, cold, pain, etc.

The detailed analysis of tactile attributes has been made by I.G. Ruzin. He considers that the majority of tactile attributes have no reference (soft, smooth, etc.). However, there is also a number of the reference one. All of them are denotational, i.e. the reference object is set by the internal form of a word. **Quality of a surface** is characterized by the adjectives satin, velvet, silk, wax, rough; **consistence** – fiber-like, spongy, jellylike, fleshy, caseous, airy, and elastic (Ружин 1994).

He offers the following tactile oppositions: smooth – rough; sharp – blunt (the characteristic of properties of a surface); dry – wet, humid, damp. Conducting a finger or a vision on a surface, we perceive it as homogeneous and we name it plane. The word corresponds to the smooth (about a surface). As it seems, both of these words designate the polymodal characteristics perceived simultaneously by vision and touch. In the smooth tactile perception prevails, whereas in plane – visual one (Ружин 1994).

## 6. Tactile attributes in medicinal plants' names

Taking into account tactile attributes offered by psychologists and linguists, as well as the tactile features identified in phytonymic lexicon (Панасенко, 2010) it is possible to present tactile sensations reflected in semantics of MP names in the following way: **quality of a surface**: rough, asperous; smooth (silkenness), prickly, sharp, horn surface, wax surface; **fabric structure** (wool, thick flannelette, velvet, felt, cloth); **consistence**: springiness, elasticity, softness, fuzziness (fuzz, moss), hardness, caseous consistence; **temperature sensations**: cold; **sensation of moisture presence/absence**: dry, wet; **greasiness**; **stickiness**; **quality of an object obtained by physical contact** (skin scratches, skin irritation after physical contact, cuts), durable (standards – iron, steel, wood); and some others.

These are general tactile sensations, reflected in my language material. However, following the principle of dividing botanical, literary and common names we see that in different languages tactile sensations are reflected in a specific way.

Tactile features may be displayed in the plant's name directly, with the help of corresponding adjectives, and indirectly, with the help of metaphor and metonymy. The ground of metaphorization is the object (artefact – needle, nail, spear, rake; texture – specific fabric, animal – hedgehog), information about which came via tactile channel.

Let us illustrate it with some examples.

### 6.1 Tactile attributes in herbaceous medicinal plants' names

Examples of tactile attributes in HMP names can be sorted in the following groups:

**quality of a surface** (rough, asperous, a structure of the sheep skin – here and further on sheep fell from Greek *arnikos* (Stodola and Volák 1985: 25), tactile attribute – asperous: French lit. *Arnica*, common *Arnique*; German lit. *Arnik*; Russian *Баранья трава*; Ukrainian *Баранець*, Czech *Arnyka* – Mountain arnica (*Arnica montana* L.); Russian lit. *Девясил шероховатый* /asperous/; Ukrainian lit. *Оман шершавий*, common *Оман шерсткий*, Polish *Oman szorstki* – Hairy elecampane (*Inula hirta* L.);

**quality of a surface – smooth**, tactile attribute – smooth: Ukrainian *Гладильник* /гладкий – smooth/ – Mountain meadow saxifrage (*Seseli libanotis* (L.) Koch), *Гладиш* – Lily-of-the-valley (*Convallaria majalis* L.) and Angular Solomon's-seal (*Polygonatum odoratum* Mill.), *Гладка бояринка* – Italian aster (*Aster amellus* L.), *Гладун*, *Гладунка* – Smooth rupturewort (*Herniaria*

glabra L.); Polish lit. *Lukrecija gładka*; Slovak lit. *Sladkovka hladkoplodá* – Liquorice (*Glycyrrhiza glabra* L.);

**quality of a surface – prickly, sharp**, tactile attribute – prickly: German *Klettendistel* /thistle as a symbol of a very prickly plant/, *Moskowitzendorn* /Muscovite's cocklebur/; English *Spanish-thistle*, American English *Canada cocklebur*, Russian *Армянский бурьян* /Armenian prickly weed/, *Ежовник* /hedgehog + suff./, *Калькуша*, *Репей колкий* – Spiny cocklebur (*Xanthium spinosum* L.); *Зубреник* – Black henbane (*Hyoscyamus niger* L.); *Остючки* – Three-lobed beggarticks (*Bidens tripartita* L.); *Рожуха* /резать – to cut/ – Common shepherd's purse (*Capsella bursa pastoris* (L.) Medik.); *Порезник*, *Серпорезник* – Common yarrow (*Achillea millefolium* L.); Ukrainian lit. *Нетреба колюча*, common *Репій польський* /Polish bur/, *Страхополох-коляк*, *Колюки*, *Колючка жах* /колючка – thorn/ – Spiny cocklebur (*Xanthium spinosum* L.); *Серпоріз* – Common yarrow (*Achillea millefolium* L.); Polish lit. *Rzepeń kolczasty* – Spiny cocklebur (*Xanthium spinosum* L.); Czech lit. *Jehlica trnitá*, Slovak *Bodľavé jablko* /bodľavý – prickly/, *Durman bodľavý*, *Trnové jablko*, *Vlčie bodľačie* – Jimson weed (*Datura stramonium* L.); lit. *Ihlica trnitá*, common *Hluchý trň*, *Ihlič pichľavý* – Spiny restharrow (*Ononis spinosa* L.), *Koľák* – Creeping thistle (*Cirsium arvense* (L.) Scop.);

**quality of a surface – wax surface**: Slovak *Voskovec* – European wild ginger (*Asarum europaeum* L.);

**quality of a surface – greasiness**: Ukrainian *Масляник* – Greater celandine (*Chelidonium majus* L.); Slovak *Masná zelina* – Marsh marigold (*Caltha palustris* L.), *Masliak*, *Máslové semeno*, *Mašlák* – Jimson weed (*Datura stramonium* L.);

**quality of a surface – stickiness**: English *Stick-tights* – Three-lobed beggarticks (*Bidens tripartita* L.), *Sticking Roger* – Black henbane (*Hyoscyamus niger* L.); Russian *Причепя*; Ukrainian *Причепя* – Three-lobed Beggarticks (*Bidens tripartita* L.);

**quality of an object obtained by physical contact – durability**, tactile attribute – durable (standards – iron, steel, wood): **standard – iron** German *Eisenhart* /iron + hard, rigid/; Ukrainian *Залізна трава* – Black pea (*Lathyrus niger* L.), *Залізниця*, *Зелізниця* – Northern running-pine (*Diphasiastrum complanatum* (L.) Holub), lit. *Залізник колючий*, *Желізник* – Prickly Jerusalem sage (*Phlomis pungens* Willd.); Czech *Železník*, Slovak lit. *Železník lekárský* – Vervain (*Verbena officinalis* L.); **standard – steel** German *Stahlkraut* /steel grass/ – Vervain (*Verbena officinalis* L.); Russian lit. *Стальник пашенный* /сталь – steel/, Ukrainian *Стальник* – Field restharrow (*Ononis arvensis* L.); **standard – wood** English *Lig-wort* – Common mullein (*Verbascum thapsus* L.); Ukrainian lit. *Деревій звичайний* /дерево – wood/ – Common yarrow (*Achillea millefolium* L.);

**quality of an object obtained by physical contact** (impossibility of physical contact and its result – skin scratches, cuts, skin irritation): French lit. *Impatiente*, common *N'y touchez pas*; German lit. *Springkraut*; English lit. *Touch me not*, common *Alive in the hand*; Russian *Не тронь меня*, *Не замай меня*, *Недотыка*; Ukrainian *Не руш мене*, *Неруш*, *Нетикалка*, *Нетиканка*; Polish lit.

*Niecirpek*, common *Nietykałek*; Czech *Netýkavka*; Slovak *Netýkavka nedotklivá*, *Netýkavka obyčajná*, *Netýkej se mne* – Touch-me-not balsam (*Impatiens noli-tangere* L.); Russian *He займай*, *Нетронь*, Ukrainian *Нечіпай-зілля* – Spiny cocklebur (*Xanthium spinosum* L.); Russian *Плаун обуюдоострый*, Ukrainian *Плаун двогострий* – Northern running-pine (*Diphasiastrum complanatum* (L.) Holub); Ukrainian *Ріжуха* – Common shepherd's purse (*Capsella bursa pastoris* (L.) Medik.); Polish lit. *Drapacz lekarski* – Blessed thistle (*Cnicus benedictus* L.);

**quality of an object – fabric structure:** wool German *Gemeines Wollkraut* /common wool grass/ – Common mullein (*Verbascum thapsus* L.); Russian lit. *Астрагал шерстистоцветковый* – Milkvetch (*Astragalus dasyanthus* Pall.); thick flannelette English lit. *Flannel mullein*, common *Flannel leaf*, *Flannel plant* – Common mullein (*Verbascum thapsus* L.); velvet English *Velvet dock*, *Velvet plant* – Common mullein (*Verbascum thapsus* L.); felt English *Feltwort* – Common mullein (*Verbascum thapsus* L.); cloth Russian *Суконник* – Common mullein (*Verbascum thapsus* L.); blanket English *Blanket leaf* – Common mullein (*Verbascum thapsus* L.); silk German *Seidenpflanzen* /silk plant/ – Great yellow gentian (*Gentiana lutea* L.); Russian *Шелковая трава* – Sweet flag (*Acorus calamus* L.), *Дебверь-шелковник* – Common mullein (*Verbascum thapsus* L.);

**quality of an object – consistence:** springiness German lit. *Springkraut*, common *Springsame*; Ukrainian *Прыговка*; Slovak *Skočec menší* – Touch-me-not balsam (*Impatiens noli-tangere* L.); flabbiness Ukrainian *Дрябчак* – Common mullein (*Verbascum thapsus* L.); softness (fuzz, moss) Russian *Пушки*, *Пушник*, *Пуховка-трава*, *Пушица круглая* – Dandelion (*Taraxacum officinale* Wigg.); Ukrainian *Мнякиш*, *М'якуш* /м'який – soft/ – Silverweed (*Potentilla anserina* L.), Czech *Měkyš*, *Skočec měký* – Touch-me-not balsam (*Impatiens noli-tangere* L.); Slovak *Měkyš*, *Skočec měký* – Hluchavka biela (*Lamium album* L.); viscosity Ukrainian *Смілка* /resin in a diminit. form/ – Common St. Johnswort (*Hypericum perforatum* L.); caseous consistence German *Kaseblume* – Wood anemone (*Anemone nemorosa* L.);

**temperature sensations – cold:** English *Ice leaf* – Common mullein (*Verbascum thapsus* L.); Ukrainian *Крижівниця* /крига – ice/ – Great yellow gentian (*Gentiana lutea* L.);

**sensation of moisture presence/absence – dry:** Russian *Суховейка* – Dwarf everlasting (*Helichrysum arenarium* (L.) Moench.); Ukrainian lit. *Суховершки звичайні* /сухий – dry/, common *Сухован*, *Суховерстка*, *Суховерх*, *Суховерчик звичайний* – Common self-heal (*Prunella vulgaris* L.), *Суха нехворощ* – Vervain (*Verbena officinalis* L.), *Суховейка*, *Суховершки польові* – Dwarf everlasting (*Helichrysum arenarium* (L.) Moench.), *Суховершки* – Red clover (*Trifolium pratense* L.) and Wood cudweed (*Gnaphalium sylvaticum* L.), lit. *Сухоцвіт лісовий*, common *Суховершок* – Wood cudweed (*Gnaphalium sylvaticum* L.), *Суховолотиця*, *Сухозлотиця* – Great burnet (*Sanguisorba officinalis* L.), *Сухотинка*, *Сухитник* – Common shepherd's purse (*Capsella bursa pastoris* (L.) Medik.); Polish *Suchotnik*, *Suchokwiat*, *Suchotnik* – Dwarf everlasting (*Helichrysum arenarium* (L.) Moench.); **wet:** Russian *Мокнец*, *Мокрец* /мокрый – wet/ –

Common hedgehyssop (*Gratiola officinalis* L.); Ukrainian *Мокрець* – Common yarrow (*Achillea millefolium* L.) /the plant collects morning dew in the leaves/ and Common hedgehyssop (*Gratiola officinalis* L.) /leaves are covered by the moisture/; *Мокров'ять* – Common yarrow (*Achillea millefolium* L.), *Мокравник*, *Мокрець простий*, *Мокринець*, *Мокриця*, *Мокровець* – Common chickweed (*Stellaria media* L.), *Мокрачка* – Alternate-leaved golden saxifrage (*Chrysosplenium alternifolium* L.), *Мокрина* – Oregano (*Origanum vulgare* L.), Polish *Mokrzec* – Water-pepper (*Polygonum hydropiper* L.).

The list of the examples above vividly shows what tactile attributes in HMP names are prevalent in one language and in a group of languages. In Ukrainian phytonyms prevail tactile attributes, characterizing durability of the plant with standard "iron". In some Slavic languages (Russian, Ukrainian, and Slovak) there are many examples, which name such a quality of the surface, as prickly and sharp. The largest number of phytonyms which reflect the sensation of moisture presence (dry and wet) is found in Ukrainian. Tactile attributes in semantics of English phytonyms have a number of specific features. First of all, we come across the names of various fabrics, both in literary and in common phytonyms. Probably, it has historical roots. In fact, England always was a developed textile state. The other feature is varied ways of the description of impossibility of physical contact with a plant.

## 6.2 Tactile attributes in medicinal plants shrub's names

There are fewer examples of tactile attributes in MPSH names in our language material, because we have less number of plants (only 14) and because of the size of the shrub. If it is a small plant it is difficult to find it and thus plant's names, especially common ones usually contain detailed information how the plant looks like, where it grows, when blossoms, etc. The shrub is larger and very often grows in colony. Common names specify its physical, useful, poisonous properties, and so on. We can group all the examples according to their tactile attributes in such a way:

**quality of a surface – smooth**, tactile attribute – smooth: Polish lit. *Drok gładki* – Dyer's broom (*Genista tinctoria* L.);

**quality of a surface – prickly, sharp**, tactile attribute – prickly: French lit. *Épine-Vinette commune* /*épine* – thorn/ – European barberry (*Berberis vulgaris* L.), common *Bourguépine*, *Épine de cerf* –

Common buckthorn (*Rhamnus cathartica* L.); German lit. *Gemeiner Sauerdorn* /dorn – thorn/ – European barberry (*Berberis vulgaris* L.), *Hagedorn* – Redhaw hawthorn (*Crataegus sanguinea* Pall.), common *Handorn* – Redhaw hawthorn (*Crataegus sanguinea* Pall.), *Hundsorn* – Dog rose (*Rosa canina* L.), *Haftorn*, *Gemeiner Sanddorn* – Sea-buckthorn (*Hippophae rhamnoides* L.), *Spießdorn* /spear + thorn/ – European barberry (*Berberis vulgaris* L.), *Rechbeere* /rake/ – Mezereon (*Daphne mezereum* L.), *Stechginster* /stechen – to prick/ – Dyer's broom (*Genista tinctoria* L.), *Stechdorn* – Sea-buckthorn (*Rhamnus cathartica* L.), *Stechholder* – Common juniper (*Juniperus communis* L.); English lit. *Sea-buckthorn*, common *Buckthorn*, *Common buckthorn*, *Purging buckthorn* (*Rhamnus cathartica* L.), *Redhaw hawthorn*, *Siberian hawthorn* (*Crataegus sanguinea* Pall.), *Blackthorn* (*Prunus spinosa* L.), *Hawthorn* – Redhaw hawthorn (*Crataegus sanguinea* Pall.), *Brier* – Dog rose (*Rosa canina* L.), *Shrub juniper* – Common juniper (*Juniperus communis* L.), *Prickwood* – European spindle-tree (*Euonymus europaea* L.); Russian *Ивотерн*, *Терновник* – Sea-buckthorn (*Hippophae rhamnoides* L.), *Крушина игольная*, *Крушина колючая* – Common buckthorn (*Rhamnus cathartica* L.), *Шильная трава*, *Шильняк* /шило – awl/ – Dyer's broom (*Genista tinctoria* L.), *Шипец*, *Шипига*, *Шипишка*, *Шипица* /шип – thorn/ – Dog rose (*Rosa canina* L.); Ukrainian *Глід-колюх* – Redhaw hawthorn (*Crataegus sanguinea* Pall.), *Жостір голчастий*, *Крушина терниста* – Common buckthorn (*Rhamnus cathartica* L.), *Шипшинник* – Dog rose (*Rosa canina* L.); Polish *Szaklak ciernisty* – Common buckthorn (*Rhamnus cathartica* L.), *Rosa cierniowa* /тернистая/, *Rosa szypszyna* – Dog rose (*Rosa canina* L.); Czech lit. *Růže šípková* and common *Šípek*, *Šipinka* – Dog rose (*Rosa canina* L.), Slovak lit. *Ruža šípková* and common *Ruža šípková*, *Šípek*, *Šípinky*, *Šipka*, *Šipki*, *Šípková ruža* – Dog rose (*Rosa canina* L.);

**quality of a surface – horn surface:** Russian *Розовик* – Cornelian cherry (*Cornus mas* L.); **wax surface:** English *Common Woadwaxen*, *Waxen woad*, *Waxen wood* – Dyer's broom (*Genista tinctoria* L.); Russian *Восковуха* /воск – wax/ – Sea-buckthorn (*Hippophae rhamnoides* L.);

**quality of an object obtained by physical contact** (impossibility of physical contact and its result – skin scratches, cuts, skin irritation): Russian *Свербак*, *Свербуис*, *Свербило* /свербеть – to itch/, *Драп*, *Дрячка* – Dog rose (*Rosa canina* L.); Slovak *Šverboritky* – Dog rose (*Rosa canina* L.), lit. *Dráč obyčajný* – European barberry (*Berberis vulgaris* L.);

**quality of an object – fabric structure:** flax English *Spurge flax* – Mezereon (*Daphne mezereum* L.);

**quality of an object – consistence:** softness (fuzz, moss) Russian *Моховка* /moss + suff./ – Raspberry (*Rubus idaeus* L.), Russian lit. *Жимолость пушистая* /пушистый – fuzzy/; Ukrainian lit. *Жимолость пухната* – Fly honeysuckle (*Lonicera xylosteum* L.); hardness German *Flieder geronlicher* /hardish lilac/ – Black elder (*Sambucus nigra* L.), *Hartheide* /hard + heath/ – Labrador tea (*Ledum palustre* L.);

**temperature sensations – cold:** German *Kühnporst* /contorted Kühlnporst – cold/ – Marsh Labrador tea (*Ledum palustre* L.);

**sensation of moisture presence/absence** – **dry**: Ukrainian *Суходеревник, Суходерево* /сухий – dry/ – Fly honeysuckle (*Lonicera xylosteum* L.); **wet**: Russian *Мокрыш* /мокрый – wet/, Ukrainian *Мокриш* /мокрый – wet/ – European barberry (*Berberis vulgaris* L.).

Literary and common names mainly specify properties of the shrub. Examples, which were formed thanks to information-processing channels are not so numerous, as in HMP.

In the names of MPSh the features of physical properties describing quality of a surface prevail, but "prickly, sharp" attributes are most frequently used. This tactile attribute is expressed not only by appropriate adjectives in various languages. As the standard the words naming a prickly plant (English), as well as pricking and cutting object are used: awl, scythe, rakes, needle, etc. (German, Slavic languages): German *Pfriemen* /contorted Pfriem – awl/ – Dyer's broom (*Genista tinctoria* L.), *Spießdorn* /spear + thorn/ – European barberry (*Berberis vulgaris* L.), *Rechbeere* /rake/ – Mezereum (*Daphne mezereum* L.).

Another group of phytonyms represents compound words including a basis of a German verb "stechen" – "to prick": *Stechginster* – Dyer's broom (*Genista tinctoria* L.), *Stechdorn* – Sea-buckthorn (*Rhamnus cathartica* L.), *Stecholder* – Common juniper (*Juniperus communis* L.).

German common *Wiedorn* /like a thorn/ – Common buckthorn (*Rhamnus cathartica* L.) has an interesting structure from morphological point of view. The samples like *Stechdorn* and *Spießdorn* testify to the redundancy in marking tactile sensations in German.

## 7. Secondary designation in phytonyms with tactile attributes and some faux pas

The examples presented above constitute a group of names, which were formed thanks to primary designation. Speaking about secondary or indirect designation, I must state that in my language material it is realized in different ways (Panasenko, 2012), first of all, with the help of metaphor and metonymy.

Metaphor in HMP reveals the following tactile attributes:

**consistence** – **springiness**: Russian *Прыгун* /sportsman – jumper/ – Touch-me-not balsam (*Impatiens noli-tangere* L.) – interpretation: ripe seeds of the plant spring for a large distance;

**quality of a surface and temperature sensations**: Russian *Мать-и-мачеха* /mother-and-stepmother/ – Coltsfoot (*Tussilago farfara* L.) – interpretation: the back of the leaves evaporates water more poorly than their face sheet that is why their bottom surface is warmer than the top;

figuratively "mother" is warm and smooth and "stepmother" is cold and hard;

**quality of a surface – stickiness:** Slovak – *Cigáňské gombíki*, English *Beggar's buttons* – Greater burdock (*Arctium lappa* L.) – interpretation: the flower of a burdock is covered by a sticky substance, probably, people who conduct a nomadic way of life may use a flower as a fastener;

**quality of a surface – smooth:** English *Lady's foxglove* – Common mullein (*Verbascum thapsus* L.) – interpretation: the plant's name reveals a structure of a surface of a leaf sheet – softness and velvet. The explanation comes from the following generally known facts: the English lady belongs to the nobility; she has gentle fingers on which she can put on gloves from the skin only of the best quality; hunting for foxes in which ladies take part is also a characteristic feature of the English culture;

**quality of a surface – prickly, sharp:** Slovak *Ježková hlava*, *Ježková palica*, *Trnové jablko*, *Vlčí hvozd* – Jimson weed (*Datura stramonium* L.) – interpretations: hedgehog is well known for its sharp needles; the plant's fruit are large, round and covered by thorns; a nail is sharp; *Mužská láska* – Spiny restharrow (*Ononis spinosa* L.) – interpretation: the plant has thorns which may bring cuts and pain like unshared love; this name is a bit ironical;

**sensation of moisture presence/absence:** Russian *Сухарьки* /dried crusts + dim. suff./ – Dwarf everlasting (*Helichrysum arenarium* (L.) Moench.) – interpretation: the plant can be preserved for a long time without water, like dry crusts.

The number of examples of metaphor in MPSh is limited only to one group:

**quality of a surface – prickly, sharp:** German *Pfriemen*, *Ackerpfriemen* /awl, field awl/ – Dyer's broom (*Genista tinctoria* L.) – interpretation: the alternate, nearly sessile leaves are glabrous and lanceolate, but the leaves have two spear-shaped stipules; Russian *Дикий крыжовник* /wild gooseberry/ – Dog rose (*Rosa canina* L.) – interpretation: gooseberry has a lot of thorns; *Придорожная иголка* /wayside needle/ – Common buckthorn (*Rhamnus cathartica* L.) – interpretation: this shrub attracts people by its black berries, but it has thorns; Ukrainian *Кішки* /cats/ – Three-lobed beggarticks (*Bidens tripartita* L.) – interpretation: dry plant's seeds scrape like cat's claws; Czech *Píwník* /cock/ – European barberry (*Berberis vulgaris* L.) – interpretation: the shrub has thorns like a cock has spurs, red berries among green leaves remind colours of a cock's head and neck.

The examples of metonymy in my database are scarce and those, which are connected with tactile sensory channel are very few, e.g.: French *Épine blanche*, *Épine de Mai*, *Noble épine* – Redhaw hawthorn (*Crataegus sanguinea* Pall.) – interpretation: the plant is named by

its part, i.e., the thorn; Russian *Суконце* – Common mullein (*Verbascum thapsus* L.) – interpretation: the plant is named after its leaf, which looks like a piece of fabric (cloth); *Золотая колючка* – Spiny cocklebur (*Xanthium spinosum* L.); *Колючка* – Meadow cranesbill (*Geranium pratense* R. Knuth) – interpretation: the plant is named by its part, the thorn; *Порез* /cut, noun/ – Common yarrow (*Achillea millefolium* L.) – interpretation: the plant is named by the result of its contact with the human skin; Russian and Ukrainian *Жесть* /tin, sheet iron/ – Common buckthorn (*Rhamnus cathartica* L.) – interpretation: dry leaves are hard and look like pieces of tile.

Each plant's name requires thorough analysis. Identical at first sight names may have different interpretation. Here I present the most vivid examples of faux pas.

German *Rother Hartriegel*, *Gelber Hartriegel* /red and yellow hard bolt/ bar/ – European barberry (*Berberis vulgaris* L.) – interpretation: though we have the word "hard" in the structure of the phytonym, unlike other examples (*Hartheide* /hard + heath/ – Labrador tea (*Ledum palustre* L.)), it denotes not physical properties of the plant, but its functional target. Barberry's stem-bark and root-bark are used for treating diarrhea. Red colour is connected with the colour of the berries, whereas yellow one – with the flowers.

English *Adam's flannel* – Common mullein (*Verbascum thapsus* L.) – interpretation: this phytonym has very interesting origin. According to the Bible, Adam, the first man on the Earth, did not wear any shirt; by flannel, his skin is metaphorically named. This plant is used in the treatment of skin diseases; thus, after its use the person will have such a smooth and velvet skin, as Adam had. The name of this plant includes several motivational features: functional purpose (treatment of the person), the object of influence – the skin, and high efficiency of treatment.

Common Russian name *Придорожная иголка* belongs to two different plants: Meadow cranesbill (*Geranium pratense* R. Knuth) and Common buckthorn (*Rhamnus cathartica* L.). Meadow cranesbill has no thorns, but its deflowered inflorescence has the shape of the needle; information-processing channel – vision. The second plant was given this name because it has thorns; information-processing channel – touch.

Russian and Ukrainian *Гладушник* /smooth + suff./ – Greater celandine (*Chelidonium majus* L.) – interpretation: other phytonyms presented above have the same structure smooth + suff.: Ukrainian *Гладильник* – Mountain meadow saxifrage (*Seseli libanotis* (L.)

Koch), *Гладиш* – Lily-of-the-valley (*Convallaria majalis* L.), but Greater celandine is used for treating skin diseases (Russian lit. Чистотел большой) and the name *Гладушник* means that after treatment the skin will be very clean and smooth.

Ukrainian common phytonym *Серпик* /scythe + dim. suff./ – Common yarrow (*Achillea millefolium* L.) indicates the form of the young sprout (bent) and the size (small); information-processing channel – vision. Another phytonym, *Серпоріз* /scythe + cut, exocentric composite) is connected with the properties of the old plant to cut the skin; information-processing channel – touch.

### 8. Combination of information-procession channels in phytonymic lexicon

The examples presented above contain as an important element of the phytonym's structure at least one tactile attribute. However, in fact in many phytonyms we can see the display not only of one channel, but of their combination, e.g. colour (vision) + quality of the surface – prickly (touch): Russian *Золотая колючка* – Spiny cocklebur (*Xanthium spinosum* L.); pleasant aroma (smell) + form (vision): English *Sweet cane* – Sweet flag (*Acorus calamus* L.).

Psychologists speak about channels interaction in the process of information processing (Bolanowski et al. 1988; Gescheider et al. 2008). In my database there are many examples which show how different channels are reflected in the name of the same plant. I want to illustrate it with some examples. I have chosen six plants, which have vivid tactile characteristics, reflected in their names.

Mountain arnica (*Arnica montana* L.) is known for its asperous leaves, associated with sheep fell. Vervain (*Verbena officinalis* L.) has very hard stem, which is reflected in tactile attributes with such durable standards, as iron and steel. Spiny cocklebur (*Xanthium spinosum* L.) is so prickly that it is impossible to collect it without gloves and scissors. Common mullein (*Verbascum thapsus* L.) is large in size, and it's leaves look like made of some fabric (wool – German, felt, velvet, thick flannelette – English, cloth – English and Russian). Sea-buckthorn (*Hippophae rhamnoides* L.) in autumn is covered by orange berries, but it is difficult to collect them because of sharp thorns. Dog rose (*Rosa canina* L.) is well known for its sweet-scented flowers, but it has sharp thorns.

The information-procession channels and their combinations are presented in Table 1.

Table 1. Combination of different information-processing channels in MP names

<b>HMP</b>		
Channels and the number of examples	Languages and the number of examples	Picture
<b>Mountain arnica</b> ( <i>Arnica montana</i> L.)		
Picture available at: <a href="http://www.alabamaplants.com/Yellowopp/Arnica_acaulis_basals.jpg">http://www.alabamaplants.com/Yellowopp/Arnica_acaulis_basals.jpg</a>		
vision 23 touch 17 vision + touch 5 smell 1	French 6, German 2, English 2, Russian 1, Ukrainian 1, Polish 5, Czech 4, Slovak 2 French 3, German 1, English 1, Russian 3, Ukrainian 8, Czech 1 Russian 2, Ukrainian 2, Polish 1 German 1	
<b>Vervain</b> ( <i>Verbena officinalis</i> L.)		
Picture available at: <a href="http://www.wisecre-gardens.com/plants/wildflower/vervain_blue.jpg">http://www.wisecre-gardens.com/plants/wildflower/vervain_blue.jpg</a>		
vision 23 touch 11 vision + touch 8	French 5, German 7, English 5, Russian 1, Ukrainian 3, Polish 7 German 4, Russian 3, Ukrainian 3, Czech 1 German 7, Russian 1	
<b>Spiny cocklebur</b> ( <i>Xanthium spinosum</i> L.)		
Picture available at: <a href="http://www.agroatlas.ru/content/weeds/Xanthium_spinosum/Xanthium_spinosum.jpg">http://www.agroatlas.ru/content/weeds/Xanthium_spinosum/Xanthium_spinosum.jpg</a>		
vision 78 touch 16 vision + touch 6	German 1, English 1, Russian 1, Ukrainian 7, Polish 2 Russian 9, Ukrainian 13, Polish 2 German 4, English 1, Russian 1	
<b>Common mullein</b> ( <i>Verbascum thapsus</i> L.)		
Picture available at: <a href="http://www.hear.org/starr/plants/images/image/?q=040723-0032">http://www.hear.org/starr/plants/images/image/?q=040723-0032</a>		
vision 78 touch 16 vision + touch 10	French 5, German 15, English 14, Russian 31, Ukrainian 3, Polish 8, Czech 2, Slovak 5 German 15, Ukrainian 1 German 2, English 7, Russian 1	
<b>MPSh</b>		
<b>Sea-buckthorn</b> ( <i>Hippophae rhamnoides</i> L.)		

Picture available at: <a href="http://en.wikipedia.org/wiki/File:Hippophae_rhamnoides_female_flowers.jpg#filelinks">Proton02 http://en.wikipedia.org/wiki/File:Hippophae_rhamnoides_female_flowers.jpg#filelinks</a>		
vision 12 touch 5	German 4, Russian 2, Ukrainian 3, Polish 1, Czech 2	
vision + touch 17	German 1, Russian 3, Ukrainian 1, French 1, German 8, English 2, Russian 3, Ukrainian 3	
<b>Dog rose (Rosa canina L.)</b>		
Picture available at: <a href="http://luirig.altervista.org/photos/t/rosa_canina.htm">http://luirig.altervista.org/photos/t/rosa_canina.htm</a>		
vision 30 touch 70 vision + touch 4 smell 1 touch + taste 1 smell + touch 1	French 8, German 6, English 6, Russian 5, Ukrainian 1, Polish 3, Slovak 1 German 1, Russian 16, Ukrainian 32, Polish 2, Czech 3, Slovak 16 German 1, Russian 1, Polish 1 German 1 German 1 English 1	

Notwithstanding obvious tactile properties of these plants, only in the name of Dog rose tactile channels prevail. In the majority of other examples – it is vision. Let me illustrate how tactile channel is combined with other information-processing channels: vision + touch: German *Einlager-Stacheln* /one + bed + thorns/, English lit. *Spiny cocklebur* – flower's structure + physical properties – Spiny cocklebur (*Xanthium spinosum* L.); Ukrainian *Крушина терниста* – resemblance with another plant + physical properties; smell + touch: English *Sweet briar* – Dog rose (*Rosa canina* L.); taste + touch: German *Weindorn* /wine thorn – sour taste of berries/.

## Conclusion

Having analyzed MP names in eight languages, we may come to the following conclusion. Cognitive approach to language units gives an opportunity to describe information-processing channels and stages of human cognitive activity, which are encoded in them.

In MP names we may single out four stages of human cognitive activity: I – accessing primary information, II – information processing, III – involving background knowledge, which has cultural specific value, IV – final estimation plant's properties.

MP name reflects different information-processing channels, but in the majority of the examples, the priority is given to vision. The second important channel is different: in literary

HMP names it is touch (German, English, Ukrainian), then comes smell (French, Russian, Ukrainian, Slovak); in common names again touch (English, Russian, Ukrainian, Polish). In literary MPSH names the priority is given to touch and in common names as well to touch (except Slovak). Smell is the third important channel in common MPSH names in French, German, Polish and Czech.

We may speak about the combination of channels in phytonymic lexicon (vision + touch, smell + touch, taste + touch, taste + vision, smell + vision and some others).

From the examples presented above it is obvious that some tactile attributes prevail: prickly and sharp, wet and dry. I suppose that they are connected with the specificity of the language material. For people who regularly collect medicinal plants it is important to know if it is safe to touch the plant directly. Tactile attribute "dry" gives instruction that the plant needs no thorough drying for preserving it for a long time, whereas plants, which collect moisture in their leaves must be collected in dry weather and in the afternoon, when morning dew is evaporated.

If we compare the number of tactile attributes in MPSH names, we'll see that they are less in number, than in HMP names. Such a property, as durability with durable standards (iron, steel, wood) is missing. We have only 2 examples of hard quality of an object (in HMP names – 13). It is connected with the properties of shrubs, which are naturally harder than herb. Such a quality of an object as fabric structure has cultural historical background. Fabrics which were known to ordinary people found its reflection in the plant's name: wool – German, Russian, thick flannelette – English, velvet – English, felt – English, cloth – Russian, blanket – English, silk – German, Russian, flax – English.

Few specific attributes characterizing the surface of the plant demonstrate keenness of observation of people who named the plant in such an original way: wax surface (English, Russian, Slovak), consistence – flabbiness (Ukrainian), softness (Russian, Ukrainian, Czech, and Slovak), viscosity (Ukrainian), caseous consistence (German), stickiness (English, Russian, Ukrainian) and some others.

In many cases for the explanation of tactile attributes, it is necessary to use special knowledge from the diversified areas of science, culture, history, mythology and so forth.

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