



## ALNUS MILL. – GENUS

**Order:** Fagales Engl.

**Family:** *Betulaceae* Gray

**Tribe:** Alneae

The plants belonging to the *Alnus* genus (World Flora Online counts 46 accepted species names [WFO]) are deciduous trees or shrubs. Widespread and abundant throughout much of the temperate world, they are sometimes considered weedy in many moister climates. Male inflorescences (catkins) are elongated and pendulous. Female inflorescences are cone-like and woody, and persist after the release of fruits. The fruits are tiny samaras, with two lateral leathery or membranaceous wings that are reduced or essentially absent in some species.

All alders are pioneer species and as such are characterized by rapid growth in the juvenile phase, low longevity (variable from species to species, for example 120 years in *A. glutinosa* and 150 in *A. cordata*), strong colonization capacity (the alders produce abundant seeds that are easily dispersed), light requirements that tend to be high, soil improvement capacities (they enrich the soil with nitrogen thanks to the presence of nitrogen-fixing symbionts of the genus *Frankia* in root nodules). [Mercurio]

*Alnus* spp. tend to have a sweet, spicy scent. [Rose]

### *Alnus* genus in Italy

The genus *Alnus* is present in Italy with four species: *A. cordata* (Loisel.) Duby, *A. glutinosa* (L.) Gaertn, *A. incana* (L.) Moench and *A. alnobetula* (Ehrh.) K. Koch (= *A. viridis* (Chaix) DC. Subsp. *Viridis*).

All alders are linked to the aquatic environment and grow in the vicinity of water courses, periodically flooded areas or in environments where rainfall is abundant. Some species vegetate even in areas with water stagnation and asphyctic peaty soils (e.g., *A. glutinosa*), others avoid soils with water stagnation (e.g., *A. incana*, *A. cordata*).

*Alnus glutinosa* (black alder, European alder, or European black alder) is distributed throughout the Italian territory and is abundantly present also in the lowlands. Its habitat consists of sheltered woods and periodically submerged or even marshy areas, where it forms pure or mixed populations together with willows and poplars. It is indifferent to the geo-lithological substrate, even though it shows a certain preference for siliceous soils, growing even in clayey and compact soils with deep water retention; it is an acidophilic plant. Its bark is dark and, when old, it is conspicuously cracked and covered with plaques; the leaves, hairless on both surfaces and sticky, especially when young, have an obtuse or slightly notched apex [Acta]. It forms suckers and grows quickly, so it can withstand frequent cuts. It is able to hybridize with *Alnus incana*. Anthesis:

February – April (variable according to the climate: it usually begins in February in the warmer areas, in March-April in the colder ones).

*Alnus incana* (grey alder or specked alder) is a circumboreal species that in Italy is present only in the northern and central parts of the country (it is naturalized in Sardinia). It is usually absent at low altitudes. It can vegetate in calcareous and damp soils, however it avoids submerged sites. It is also very adaptable to soils which are poor in nutrients and it is the most basophylic among the Italian alders. The bark is light-colored and is usually smooth; the leaves are cuspidate, whitish and pubescent on the underside. Young branches and leaves are not sticky, even when young [Acta]. This species, which is endowed with a great suckering ability, is successfully employed in the reinforcement of road slopes and unstable slopes, particularly in the mountains. Anthesis: March-May.

*Alnus alnobetula* (green alder), microthermal, is only present in the Alpine regions and does not drop below 600 m. It has a shrubby habit, greenish bark with abundant lenticels; smaller, finely toothed, bright green leaves. [Acta] The young branches and leaves are sticky.

*Alnus cordata* (Italian alder) is a Corsican-Italic endemism. In Italy it is present in an area that ranges from the Tyrrhenian side of Campania and Lucania up to the whole Calabria. It is also present in the northern part of Sardinia. Its habitat are impluvia or areas near water courses, in deep soils, rich in nutrients and rather humid, as long as they are not asphyctic and water does not stagnates. It is a heliophilous forest species of mountain and submontane areas, vegetating in purity or in association especially with chestnut, turkey oak, beech, from the plain to about 1300 m [Acta]. In other words, it is found in an intermediate zone between the vegetation areas of chestnut and Turkey oak and that of beech (in Calabria it also mixes with the larch pine) [Mercurio]. It differs from other alders because it is mesohygrophilous and can tolerate moderate climatic aridity better than other alders, even if it requires annual rainfall of not less than 1000 mm. Furthermore, its growth is favored by acidic soils. These characteristics allow it to be used in the reforestation of bare soils that are rich in clay and gravel [Dryades], although in the compact clayey soils of the central-northern Apennines the plants soon stop growing in height and take on a bushy habit [Mercurio]. Anthesis: March-April [Dryades]. The Italian alder has a marked suckering ability, so it is often governed by coppice. It has sticky buds and twigs.

The Italian alder woods form durable cenosis in evolved, deep soils with good water availability due to a superficial or surfacing water table. On less evolved soils, such as in areas abandoned by agricultural activities or in areas where the forest canopy of mesophilic broad-leaved trees has been eliminated, the Italian alder behaves as a pioneer species in abandoned areas, or in areas affected by soil movements or fires, and gives rise to transitory formations which, depending on the altitude, can evolve towards Turkey oak or beech woods. [Mercurio]

The thermal requirements of the Italian alders can be graded in ascending order: *A. alnobetula*, *A. incana*, *A. cordata*, *A. glutinosa*. [Mercurio]

Similarly, water requirements can be graded, still in ascending order: *A. cordata*, *A. alnobetula*, *A. incana*, *A. glutinosa*. [Mercurio]

## ALNUS SPP.



<i>Primary functionality:</i>	Venus [Culpeper]
<i>Secondary functionality:</i>	
<i>Nature:</i>	Temperate or slightly cold, dry
<i>Taste:</i>	Bitter and astringent, with some level of sweet and aromatic
<i>Tropism:</i>	Epithelia (mucous membranes, skin, vascular – and, in particular, arterial – epithelium), lymphatic system, digestive system and metabolism, central nervous system. For <i>A. incana</i> , also: female genital organs (breasts and uterus), genital mucous membranes and skeletal system.
<i>Humoral actions</i> <sup>1</sup> :	Resolves heat and/or phlegm excesses and stagnation, also removing damp-heat and toxic heat; supplies tension to (stimulates) the metabolic “system”, the epithelia and the lymphatic system
<i>Clinical actions:</i>	Alterative, anodyne, antidiaphoretic, anti-infective, anti-inflammatory, anti-thrombotic, anti-viral, astringent, choleric, cicatrizing, diaphoretic, diuretic, emetic, emmenagogue (blood moving), febrifuge, galactofuge, galactagogue, hemostatic, lymphatic, parasiticide, purgative, refreshing, tonic, vermifuge, vulnerary.
<i>Used parts:</i>	Leaves, inflorescences, young twigs, inner bark

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<sup>1</sup> See the “Notes on humors” paragraph.

## Description

Many *Alnus* species are used as medicine. In Europe the most used in this sense are *A. glutinosa* and *A. incana*. Literature references about *A. cordata* are very few; for example, it is reported that the bark of the branches is chewed in case of gastritis [Menal] and that the leaves are rubbed locally to remove warts and corns [Maruca]).

The most traditionally used species in North America is “tag alder” (*Alnus serrulata* Willd., syn.: *Alnus rubra* Desf. Ex Steud., not to be confused with *Alnus rubra* Bong.). In Asia, *A. japonica* (Thunb.) Steud (found in Japan, Korea, Taiwan, eastern China, and Russia), *A. nepalensis* D. Don (found in the subtropical highlands of the Himalayas) and *Alnus hirsuta* (Spach) Rupr. (mountains of Northeast Asia and Central Asia) are widely used.

The various *Alnus* species often have very similar medicinal properties, in some cases almost overlapping. For instance, Matthew Wood reports that “*European alder [Alnus glutinosa] seems to have virtually the same properties as its cousin, the American tag alder (Alnus serrulata). The details are not as well developed in the clinical picture, but we see the same emphasis on tissue cleansing, glandular swelling, poor digestion, and dry, chronic skin disease. Today both species have been largely forgotten.*” [Wood]

According to Kiva Rose, there is a certain variability in flavor (and therefore in effects) between the different alders, but also a “core” that is common to all: “*Taste of bark tends to vary across Alnus species and habitat to some degree but some level of sweet, astringent, aromatic and slightly bitter seems to be fairly standard. Some species of Alder possess very resinous, sticky leaves with a sweet taste where others are more straightforwardly astringent.*” [Rose]

In this text we will therefore treat the different *Alnus* species at the same time, explicitly indicating any specific uses when these are known.

The therapeutic differences between the species are also somewhat linked to natural habitats: the species that usually grow in frequently flooded environments and therefore in asphyctic soils (e.g., *A. glutinosa*) are more suitable for treating primarily exudative/purulent (acute) inflammatory conditions, where the less hygrophilous species which are able to colonize more structured soils (e.g., *A. incana*, *A. cordata*) are also suitable to treat more or less chronic inflammatory conditions (also compare [Dewit-Leunis, Piterà]).

The most obvious feature of alders is their very affinity to water. Indeed, they grow in environments where the presence of this element is important, preferring the banks of waterways, periodically flooded areas or, alternatively, lands where rainfall is abundant. Often their wood becomes dark and almost incorruptible after being placed in water: this is the case, for example, of the black alder that has been used to build the foundations of stilts and of the buildings in Venice and Amsterdam. We find this usage in the words of Mattioli: “*And yet not little is brought to Venice for the foundations of the palaces, and other buildings, not only because it is, being buried in water, incorruptible, but because the piling, that are made tight with it, support every great building above them.*” [Mattioli]

One of the possible etyma of “*Alnus*”, the name with which the Romans already called these trees, is the Celtic “*al lan*” = “*near the banks*”, which clearly refers to the preference of these trees for damp places [Peroni].

Another important feature of alders is their low affinity for fire: they are typically poorly combustible (although they are sometimes used to produce good or medium quality coal) and easily grow back after fires (e.g., *A. cordata*, *A. incana*).

According to Kiva Rose these trees always speak “of the balance of fire and water, of rebirth and change.” [Rose]. Moreover:

“Alder is river medicine, a remedy deeply aligned with the flow and transformation of fluids in the waterways of the wetland ecologies it grows within as well as the blood and lymph of the human body.” [...] Alder as a tree transform “the quality of the water, so too it acts on the body’s ability to transform food into nourishment and supports the eliminatory organs’ role in moving and removing waste. [...] Having a range of actions extending from alterative to lymphatic to pain reliever/blood mover to astringent to powerful anti-bacterial agent, there’s a reason this tree has been considered an overall tonic by many indigenous tribes. When it comes down it though, the medicine is all about the transformation and nourishment of the body’s vital fluids, whether through lymph, blood, bile, digestive fluids, urine etc. [...] it doesn’t add to the fluids, nor does it simply move or contain them; rather, it improves/transforms the quality of the fluids.” [Rose]

Alders are tannin-rich plants. According to Mrs. Grieve, in European alder the bark and young shoots contain from 16 to 20 per cent of tannic acid [Grieve]. This certainly confer the plant both a bitter and an astringent quality.

As bitters, alders stimulate digestive (gallbladder, stomach, intestines, pancreas) secretion, and the tannins improve the tone of mucous membranes. Therefore these plants act both as bitter, astringent tonics that stimulate assimilation and nutrition, and, at the same time, as alteratives which enhance the body elimination processes [Wood].

These plants have a very efficient ability to “purify” body fluids, acting as efficacious lymphatic remedies. Indeed, they are able to clear lymphatic congestion and enlarged glands [Rose, Wood, Wood2].

Alders exert an important anti-inflammatory (and therefore also anodyne) action [Durante, Mattioli, Piterà, Rose]. Some species are more active in the exudative/suppurative (and therefore acute) stages, others in more chronic stages, also in relation to the characteristics of the habitats in which they naturally grow. The anti-inflammatory and lymphatic alterative actions are probably together responsible for their important action against infections due to bacteria, fungi or viruses.

As bitters, *Alnus* species are also able to counteract fever and are especially good at treating malaria and recurrent fevers. [Culpeper, Grieve, Peroni, Scholten, Wood]

When it is used as an alterative, “*Alnus* is slow in its action, and should, therefore, be continued for a considerable length of time” (Fyfe) [Wood2].

## Properties

### ***Temperature and taste***

Alders are classified as temperate [Durante], mildly cooling/cooling/cold [Culpeper, Gerard, Rose] and dry/astringent [Durante, Rose]. The inner bark is more astringent than the other parts of the plant [Durante, Rose].

*Alnus glutinosa* and *Alnus serrulata* are classified as a bitter and astringent. [Wood, Wood2]

Taste of bark tends to vary across *Alnus* species and habitat to some degree but some level of sweet, astringent, aromatic and slightly bitter seems to be fairly standard. Some species of alder possess very resinous, sticky leaves with a sweet taste where others are more straightforwardly astringent. [Rose]

## ***Signature***

According to Culpeper, “*it is a tree under the dominion of Venus, and of some watery sign or other, I suppose Pisces.*” [Culpeper]

## ***Tissue Phases***

Currently, only *A. glutinosa* and *A. incana* have been studied from the point of view of their action on serum proteins.

The tissue phases on which *A. glutinosa* (which is capable of vegetating in areas with water stagnation and asphyctic peaty soils) acts are mainly: 1 (activation), 2 (inflammation) and 4 (fibrosis). *A. incana* (which avoids soils with water stagnation) acts on phases: 2 (inflammation), 3 (deposition) and 5 (necrosis) [Dewit-Leunis].

## **Actions and indications<sup>2</sup>**

### ***Humoral actions***

*Alnus* resolves heat and/or phlegm excesses and stagnation, also removing damp-heat and toxic heat. Moreover, it supplies tension to (stimulates) the metabolic “system”, the epithelia and the lymphatic system. *Alnus* is not a phlegm tonic (TCM: Yin tonic) *in se*, since it does not provide fluids directly to the body; rather, it stimulates the digestion/assimilation processes so that the body can resolve undernourishment and lack of fluids by itself.

### ***Tropism***

Alders seem to have an elective tropism for epithelia (mucous membranes, skin, vascular – and, in particular, arterial – epithelium), the lymphatic system, the digestive system and metabolism, the central nervous system (see [Piterà, Rose, Wood, Wood2]).

*A. incana* also has an important tropism for the female genital organs (breasts and uterus), the genital mucous membranes and the skeletal system. [Piterà]

### ***Clinical actions***

Alterative, anodyne, antidiaphoretic, anti-infective, anti-inflammatory, anti-thrombotic, anti-viral, astringent, choleric, cicatrizing, diaphoretic, diuretic, emetic, emmenagogue (blood moving), febrifuge, galactofuge, galactagogue, hemostatic, lymphatic, parasiticide, purgative, refreshing, tonic, vermifuge, vulnerary.

### ***Principal actions***

- Anti-inflammatory [Atzei, Culpeper, Gerard, Peroni, Rose, Wood]
  - Hot swellings (*Alnus glutinosa* leaves). [Culpeper, Gerard]

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<sup>2</sup> In this section, the *Alnus* species for which each action/indication is documented are indicated in brackets. If no indication is given, the reference is to *Alnus* spp., i.e., to any plant belonging to the genus *Alnus*.

- Burnings and inflammations (*Alnus glutinosa*, decoction or distilled water of the leaves, external use). [Culpeper]
  - Swellings and inflammations, especially of the throat (*Alnus glutinosa*, decoction of bark, external use) [Grieve]
  - Liter.: “*The fresh leaves laid upon swellings dissolve them, and stay the inflammations.*” (*Alnus glutinosa*) [Culpeper]
- Vulnerary, cicatrizing, hemostatic (*Alnus glutinosa*, *A. nepalensis*, *Alnus hirsuta*, *Alnus* spp.) [Atzei, Duraffourd-Lapraz, Rose, Sati]
    - Abrasion, wound, bruise or musco-skeletal injury. [Rose]
    - Slow healing wounds & infections. [Rose]
- Febrifuge (leaves, bark) [Duraffourd-Lapraz, Peroni, Sati]; for ague [Culpeper, Grieve, Peroni, Scholten, Wood] (*Alnus glutinosa*, *Alnus* spp.)
    - Liter.: “*excellent substitute for cinchona in the treatment of malaria*” [Peroni]
- Purgative [Sati, Wood]
    - Liter.: “*The bitters purge the gallbladder and intestines, but the tannins improve the tone, which is much desired in a purgative.*” [Wood]
    - Liter.: “*The inner rind [...] is yellow, and is a good purge (John Hill, 1740).*” [Wood]
    - Lityer.: “*Decoction for purgation: ‘boil an ounce of it in a quart of water, and throw in at least two drams of ginger and some caraway seeds; let the patient proportion the quantity to his strength’ (John Hill).*” [Wood]
- Alterative [Rose, Sati]
  - Anodyne [Rose]
  - Antidiaphoretic (*Alnus glutinosa* leaf) [Atzei]
    - Liter.: to stop the sweating of feet, the leaf is applied directly to the fingers [Atzei]
  - Anti-infective [Rose]
  - Anti thrombotic (*Alnus glutinosa* buds) [Piterà]
  - Anti-viral [Rose]
  - Astringent [Atzei, Duraffourd-Lapraz, Grieve, Peroni, Rose, Sati]
  - Choleric [Duraffourd-Lapraz]
  - Diaphoretic (*Alnus glutinosa* bark) [Atzei]
  - Diuretic (*Alnus glutinosa* leaf infusion) [Atzei]
  - Emetic [Sati]

- Emmenagogue, blood moving (*Alnus serrulata*, *Alnus* spp.) [Clarke, Rose]
- Galattofuge (*Alnus incana* and *Alnus glutinosa*) [Piterà]
- Galactagogue [Sati]
- Lymphatic [Rose]
- Parasiticide [Sati]
- Refreshing (sap from the trunk and branches extracted in spring, bark) [Atzei]
- Tonic [Grieve]
- Vermifuge [Sati]

### ***Specific indications***

#### *Constitution*

- Debilitated and elderly people with lack of secretion, digestion, assimilation, nutrition, and waste removal; with skin conditions (*Alnus serrulata*) [Wood2].
- *Hypoimmunity with swollen lymph glands, poor digestion of fats and proteins and slow healing wounds/injuries* [Rose] (also compare [Wood, Wood2]).

#### *General*

- Acute and chronic inflammatory syndromes (*Alnus glutinosa* buds) [Piterà].
- Mucosal-catarrhal and mucosal-suppurative syndromes (*Alnus glutinosa* buds) [Piterà].
- Outcomes of inflammatory processes that tend to become chronic (*Alnus glutinosa* buds) [Piterà].
- Chronic inflammatory condition with sclerosis and tissue damage (*Alnus incana* buds) [Piterà].
- Chronic inflammation of any tissue that does not respond to other treatments (*Alnus incana* buds) [Piterà].
- Post-inflammatory fibrinosis (*Alnus glutinosa* buds) [Piterà].
- Night sweats (*Alnus glutinosa* buds) [Piterà].
- Tissue alterations and benign neoformations (*Alnus incana* buds) [Piterà].

#### *Immune system*

- Systemic or local infections, chronic or acute [Rose].
  - Virosis: flu, mononucleosis, measles (*Alnus glutinosa* buds) [Piterà].
  - Chronic infections in the body, with boggy and soft tissues [Rose].



- Best for microbial (from bacteria, fungi, viruses) infections of the gut, gums/mouth, urinary apparatus, vagina, skin and systemic infections and less good for those of the respiratory tract [Rose].
- Protracted duration of flu/cold with immune sluggishness and swollen glands (better with a warming circulatory stimulant like Ginger or Monarda) [Rose].
- Staph (including several confirmed cases of MRSA) infection (clear up with the consistent use of Alder tincture) [Rose].
- Vaginal and urinary tract infections, also combined [Rose].
- Sepsis (needs a quick and aggressive treatment) [Rose].
- Liter.: “*Consistent and powerful ability to act as a profound alterative and lymphatic while addressing even the most severe microbial infections.*” [Rose].
- *Hypoimmunity with swollen lymph glands* [Rose] (also compare [Wood, Wood2]).
- Scrofula, scrofulous conditions (*Alnus serrulata*) [Clarke, Rose].
- Glandular swelling (*Alnus serrulata, Alnus glutinosa*) [Clarke, Wood].
- Fever (*Alnus glutinosa, Alnus incana, Alnus hirsuta*) [Culpeper, Grieve, Piterà, Sati, Wood]
  - Malaria (*Alnus glutinosa*, decoction of the bark, leaves decoction or water distilled from the leaves) [Culpeper, Grieve, Wood].
  - Hemorrhagic fever (*Alnus glutinosa* buds) [Piterà].
  - Flu syndrome (*Alnus glutinosa* buds and *Alnus incana* buds) [Piterà].

### *Head and Central Nervous System*

- Headache, migraine: acute and chronic, of vasomotor or digestive origin (*Alnus glutinosa* buds) [Piterà].
- Giddiness (*Alnus glutinosa* buds) [Peroni], giddiness on an atherosclerotic basis (*Alnus glutinosa* buds) [Piterà].
- Mental asthenia (*Alnus glutinosa* buds) [Piterà].
- Cerebral arteriosclerosis (*Alnus glutinosa* buds) [Piterà].
- Vascular-based brain deficiency in the elderly, brain deficits in the angiosclerotic elderly (*Alnus glutinosa* buds) [Piterà].
- Senile dementia (*Alnus glutinosa* buds) [Piterà].
- Cerebral haemorrhage (outcomes), with or without cerebral softening (*Alnus glutinosa* buds) [Piterà].
- Transient Ischemic Attacks (TIA) (*Alnus glutinosa* buds) [Piterà].
- Cerebral ischemia (outcomes) (*Alnus glutinosa* buds) [Piterà].
- Neurovegetative lability (*Alnus glutinosa* buds) [Piterà].
- Alzheimer’s disease (*Alnus glutinosa* buds, *Alnus incana* buds) [Piterà].

- Parkinson's disease (*Alnus glutinosa* buds, *Alnus incana* buds) [Piterà].
- Cerebrovascular diseases (*Alnus glutinosa* buds) [Piterà].
- Cerebral softening of the elderly (*Alnus glutinosa* buds) [Piterà].
- Reversible Ischemic Neurological Deficits (RIND) (*Alnus glutinosa* buds) [Piterà].
- Cerebral sclerosis (*Alnus glutinosa* buds) [Piterà].
- Memory disturbances (*Alnus glutinosa* buds) [Piterà].
- Multiple sclerosis (*Alnus incana* buds) [Piterà].
- Demyelinating syndrome (*Alnus incana* buds) [Piterà].

### *Ears*

- Otitis, catarrhal otitis, serous otitis (*Alnus glutinosa* buds) [Piterà].
- Tinnitus (*Alnus glutinosa* buds) [Peroni].
- Labyrinthitis (*Alnus glutinosa* buds) [Peroni].

### *Eyes*

- Retinal thrombosis (*Alnus glutinosa* buds) [Piterà].

### *Mouth*

- Mouth inflammations (*Alnus glutinosa* bark) [Sati], mucositis (*Alnus glutinosa* buds) [Piterà].
  - Gingivitis, gingivostomatitis (*Alnus glutinosa* buds) [Piterà].
- Aphthous ulcers (canker sores; *Alnus glutinosa*) [Wood].

### *Nose*

- Rhinitis (*Alnus glutinosa*) [Wood].

### *Cardiovascular system*

- Hemorrhage (*Alnus glutinosa*, *A. nepalensis*, *Alnus hirsuta*, *A. serrulata*, *Alnus* spp.) [Clarke, Rose, Sati, Wood, Wood2].
- Inflammation of blood vessels: angiitis, aortitis, arteritis, thrombotic arteritis, coronary artery disease, phlebitis, paraphlebitis, thrombophlebitis, nodular vasculitis (*Alnus glutinosa* buds) [Piterà].
- Myocarditis (*Alnus glutinosa* buds) [Piterà].

- Stenosis of blood vessels: carotid atheromasia, atheromasia of the supra-aortic arterial trunks directed to the brain, arterial and venous thrombosis (*Alnus glutinosa* buds) [Piterà].
- Mitral stenosis (*Alnus glutinosa* buds) [Piterà].
- Chronic pulmonary heart (*Alnus glutinosa* buds) [Piterà].
- Edema of cardiac origin (*Alnus glutinosa* buds) [Piterà].
- Chilblains (*Alnus glutinosa* buds) [Piterà].
- Wegener's granulomatosis (*Alnus glutinosa* buds) [Piterà].
- Myocardial infarction, outcomes of myocardial infarction (*Alnus glutinosa* buds) [Piterà].
  - after the second week, with *Zea mays*; during the first week, *Cornus sanguinea* is more suitable [Piterà].
- Arterial vascular insufficiency(*Alnus glutinosa* buds) [Piterà].
- Vascular sclerosis (*Alnus glutinosa* buds) [Piterà].
- Vascular spasms (*Alnus glutinosa* buds) [Piterà].
- Varices, varicose ulcers (*Alnus glutinosa* buds and *Alnus incana* buds) [Piterà].
- Diabetic vasculopathy (*Alnus glutinosa* buds) [Piterà].
- Hemorrhoids (*Alnus incana* buds) [Piterà].

#### *Lymphatic system*

- Lymphatic stagnation; swelling and suppuration; poor nutrition and waste removal; marasmus (*Alnus serrulata*) [Wood2].

#### *Respiratory system and throat*

- Inflammations (*A. glutinosa*) [Peroni, Piterà, Sati, Wood]:
  - Laryngitis, pharyngitis, tracheitis (*A. glutinosa*) [Peroni, Piterà, Sati, Wood]:
  - Rhinitis, chronic rhinitis, nasopharyngitis (*Alnus glutinosa* buds) [Piterà].
  - Respiratory, bronchial and pulmonary inflammation (*Alnus glutinosa* buds) [Piterà].
  - Sub-acute inflammations with diffusive tendency (*Alnus glutinosa* buds) [Piterà].
  - Pleuropneumonia (*Alnus glutinosa* buds) [Piterà].
  - Inflammatory and suppurative processes of the rhinosinusal and tracheobronchial mucous membranes with fever (*Alnus glutinosa* buds) [Piterà].
  - Acute, subacute and chronic suppurative sinusitis; outcomes of sinusitis (*Alnus glutinosa* buds) [Piterà].
  - Bronchitis (outcomes) (*Alnus glutinosa* buds) [Piterà].
- Enlarged glands (*Alnus glutinosa*) [Gerard, Piterà, Wood].
- Anosmia (*Alnus glutinosa* buds) [Piterà].

- Asthma; allergic and intrinsic bronchial (*Alnus glutinosa* buds) [Piterà].
- Pulmonary congestion (*Alnus glutinosa* buds) [Piterà].

### *Gastrointestinal system*

- Poor digestion due to lack of gastric secretion, dyspepsia; inactive colon, with constipation, diarrhea, or constipation rotating with diarrhea (*Alnus glutinosa*, *Alnus serrulata*, *Alnus* spp.) [Rose, Wood, Wood2]:
  - Stomach debility; lack of gastric secretion (poor digestion); with indigestion. Inactive colon, with constipation, or diarrhea (*Alnus glutinosa*) [Wood].
  - Dyspepsia; especially in old persons, with a heavy, sleepy feeling after meals, flatulence, diarrhea alternating with constipation (*Alnus serrulata*) [Wood2].
  - Constipation, or constipation rotating with diarrhea; with poor protein/fat digestion and accompanying skin disorders [Rose].
  - Diarrhea, dysentery (Ayurveda: leaf, roots, and bark of *A. nepalensis*, Korean and Chinese traditional medicine: *Alnus hirsuta* bark) [Sati].
- Stomach ache (Ayurveda: leaf, roots, and bark of *A. nepalensis*) [Sati].
- Hemorrhoids (*Alnus incana* buds, internal use [Piterà]; *Alnus serrulata* external use, with *Cornus Florida*, equal parts [Wood2]).
- Post-inflammatory and post-surgical adhesions (*Alnus glutinosa* buds) [Piterà].
- Aphthous and ulcero-membranous stomatitis (*Alnus glutinosa* buds) [Piterà].
- Ulcero-membranous angina (*Alnus glutinosa* buds) [Piterà].
- Colitis, gastritis, gastroduodenitis (*Alnus glutinosa* buds) [Piterà].
- Crohn's disease (*Alnus glutinosa* buds and *Alnus incana* buds) [Piterà].
  - in Crohn's disease *A. glutinosa* is active when the patient's electrophoresis shows a marked increase in  $\alpha_1$  and  $\alpha_2$  globulins. If hyper- $\gamma$ -globulinemia is also present, *Alnus incana* is more active [Piterà].
- Peritonitis (outcomes) (*Alnus glutinosa* buds) [Piterà].
- Recurrent gastroduodenal ulcer (*Alnus glutinosa* buds) [Piterà].
- Visceral ptosis (*Alnus incana* buds) [Piterà].
- Pain in rectum after stool (*Alnus glutinosa*, Cooper) [Clarke]

### *Liver and gallbladder*

- Gallbladder congestion, jaundice (*Alnus glutinosa*) [Wood].
- Hepatitis (*Alnus japonica*, popular folk medicine in Korea) [Sati].
- Cholecystitis (*Alnus glutinosa* buds) [Piterà].

- Cholelithiasis (*Alnus glutinosa* buds) [Piterà].
- Inflammatory and suppurative processes of the gallbladder mucous membrane with fever (*Alnus glutinosa* buds) [Piterà].
- Alterations of the hepatic parenchyma, cirrhosis of the liver (*Alnus incana* buds) [Piterà].

#### *Metabolism*

- Gout (*Alnus glutinosa* buds) [Piterà].
- Hyperuricemia (*Alnus glutinosa* buds) [Piterà].

#### *Endocrine system*

- Galactorrhea (*Alnus glutinosa* buds) [Piterà].
- Adrenocortical insufficiency (*Alnus glutinosa* buds) [Piterà].
- Hypergalactia (*Alnus glutinosa* buds) [Piterà].

#### *Urinary system*

- Gravel (*Alnus serrulata*) [Clarke, Wood].
- Hematuria (*Alnus serrulata*) [Clarke].
- Edema (*Alnus glutinosa* leaf tea) [Wood], dropsy (*Alnus glutinosa*, leaf infusion) [Atzei].
- Cystitis (*Alnus serrulata*) [Wood2], (*Alnus glutinosa* buds) [Piterà]; pyelitis, inflammatory and suppurative processes of the cystopyelic mucosa with fever (*Alnus glutinosa* buds) [Piterà].
- Cystopyelitis (*Alnus glutinosa* buds) [Piterà].
- Hyperkalemia (*Alnus glutinosa* buds) [Piterà].
- Uremia (*Alnus glutinosa* buds) [Piterà].

#### *Sexual organs*

- Syphilis (*Alnus serrulata*, *Alnus* spp.) [Clarke, Rose].
- Blenorrhagia (outcomes) (*Alnus glutinosa* buds) [Piterà].
- Gleet (*Alnus serrulata*) [Clarke].
- Galactorrhea (*Alnus glutinosa* buds and *Alnus incana* buds) [Piterà].

## FEMALE

- Amenorrhea (*Alnus serrulata*) [Clarke].
  - with burning pains from back to pubis (*Alnus serrulata*) [Clarke, Wood2].
- Leucorrhoea (*Alnus serrulata*) [Clarke]; douche (*Alnus glutinosa*) [Wood], (*Alnus glutinosa* buds) [Piterà].
  - with erosions of the cervix which bleed easily (*Alnus serrulata*) [Clarke, Wood2].
- Mastitis, congestive mastitis (*Alnus glutinosa*, *Alnus incana*) [Atzei, Piterà, Wood]; mastodynia (*Alnus incana* buds) [Piterà].
  - to unblock the coagulation of milk in the breast (massage with oiled leaf; or application of fresh alder leaf and navelwort) [Atzei].
- Breast abscess (*Alnus glutinosa* buds) [Piterà].
- Fibrocystic and fibroadenocystic mastopathies (*Alnus incana* buds) [Piterà].
- Vaginal atrophy (*Alnus incana* buds) [Piterà].
- Uterine fibroids (*Alnus incana* buds) [Piterà].
- Hypergalactia (*Alnus glutinosa* buds) [Piterà].
- Prolapse and ptosis of the uterus (*Alnus incana* buds) [Piterà].

## MALE

- Prostate adenoma (*Alnus incana* buds) [Piterà].
- Urocele (*Alnus incana* buds) [Piterà].

## *Musculoskeletal system*

- Rheumatism (*Alnus serrulata*, *Alnus glutinosa*) [Clarke, Grieve, Wood].
  - Acute joint rheumatism, chronic joint rheumatism (outcomes) (*Alnus glutinosa* buds) [Piterà].
  - Liter.: "Peasants on the Alps are reported to be frequently cured of rheumatism by being covered with bags full of the heated leaves." (*Alnus glutinosa*) [Grieve].
- Arthritis (*Alnus serrulata*) [Wood2].
- Paget's disease (*Alnus glutinosa* buds) [Piterà].
- Osteitis (*Alnus glutinosa* buds) [Piterà].
- Osteomyelitis (outcomes) (*Alnus glutinosa* buds) [Piterà].
- Osteoporosis (*Alnus glutinosa* buds and *Alnus incana* buds) [Piterà].
- Arthralgia due to arthrosis with an osteoporotic component (*Alnus incana* buds) [Piterà].

### *Skin and mucous membranes*

- Inflammatory syndromes of the skin and mucous membranes (*Alnus glutinosa*, *Alnus incana*) (cfr. [Piterà]).
- Catarrhal and suppurative mucosal syndromes (*Alnus glutinosa* buds) [Piterà].
- Skin conditions; dry, chronic skin diseases (*Alnus glutinosa*, *Alnus serrulata*) [Wood, Wood2].
  - Pustular, scaly; eruptions, acne, eczema, furunculosis, scruffy scalp (*Alnus glutinosa*) [Wood].
  - Boils, breakdown of surfaces, ulcerations of the skin, mouth, and throat; eczematous and pustular skin conditions (*Alnus serrulata*) [Wood2].
  - Erysipelas (*Alnus serrulata* [Wood2], *Alnus glutinosa* buds [Piterà]).
  - Any kind of skin condition like eczema or scale (*Alnus serrulata*, Tommie Bass) [Rose].
- Herpes (*Alnus serrulata*, *Alnus glutinosa*) [Clarke].
- Impetigo (*Alnus serrulata*, *Alnus glutinosa*) [Clarke, Wood].
- Itch (*Alnus glutinosa* inner bark bruised in vinegar, external use) [Wood].
- Prurigo (*Alnus serrulata*, *Alnus glutinosa*) [Clarke].
- Wounds, ulcers, sores (*Alnus glutinosa* leaves; external use) [Gerard, Peroni].
- Lice (*Alnus glutinosa*) [Sati].
- Scabies (*Alnus glutinosa*) [Sati].
  - Liter.: “The vinegar extract of inner bark of plant produces a useful wash to treat lice and a range of skin problems such as scabies and scabs.” (*Alnus glutinosa*) [Sati].
- Bruises, burns (*Alnus glutinosa*: leaf poultice, decoction or distilled water of the leaves; external use) [Culpeper, Wood].
- Gangrene (*Alnus glutinosa* leaf poultice). [Wood].
- Warts (*Alnus glutinosa*, fresh leaves rubbed on) [Peroni], (*Alnus incana* buds) [Piterà]
- Abscesses, boils (shredded leaves applied as a poultice to help ripening) [Peroni].
- Allergies, mucosal hyperplastic allergies, allergic dermatitis, erythematous dermatitis and dermatosis, acute and chronic urticaria (*Alnus glutinosa* buds) [Piterà].
- Hemangiomas, capillary angiomas (*Alnus incana* buds) [Piterà].
- Palmoplantar Hyperhidrosis (*Alnus incana* buds) [Piterà].
- Skin growths (*Alnus incana* buds) [Piterà].

### *Other*

- Cellulitis [Rose].
- Cancer (*Alnus japonica*, popular folk medicine in Korea) [Sati].

- Alcoholism (Korean and Chinese traditional medicine: *Alnus hirsuta* bark) [Sati].

### **Parts used and their collection**

Twigs, leaves leaf buds, inner bark and inflorescences (both male and female) are all medicinal. [Peroni, Rose]

The bark of the body of the tree is more astringent, while the young twigs are sweeter, more aromatic, and less astringent (as well as easier to harvest). [Rose]

Inner bark is harvested in autumn or winter; the young branches are harvested in spring; the leaves are harvested from March to April or when they are stickier (usually during the first half of July). Twigs and catkins can be collected just when they begin to flower. [Peroni, Rose]

The fresh buds of *Alnus glutinosa* and *Alnus incana* are harvested in the spring when they begin to swell.

### **Preparation and dosage**

Infusions and decoctions can be used internally or externally according to the conditions. The tinctures (of leaves, twigs, catkins, inner bark) can be administered in 1-60 drops amounts, one or more times a day.

### **Contraindications and collateral effects**

Alder is one of the safest herbs, with very few contraindications. Anyhow, because of tannins the inner bark is so bitter that it is hard to avoid vomiting if moderate to large doses are used [Wood]. This doesn't seem to apply to fresh plant tincture. [Rose]

Due to its inherent astringency, in water-based preparations it can prevent nutrient absorption and will cause nausea, vomiting and other digestive upset when used in large doses or over a long period of time. This consideration does not seem to apply to the tincture which apparently does not extract enough tannins to be an issue. [Rose]

As a precaution, do not administer during breastfeeding as it can reduce the milk supply due to the galactofuge action. [Piterà]

### **Gemmotherapy**

*A. glutinosa* and *A. incana* buds are used in gemmotherapy.

*A. glutinosa* stimulates the granulopoietic lineage and acts on the thrombophilic condition; indeed, it is the remedy for acute thrombotic venous syndrome. It has a mainly anti-inflammatory profile and acts in particular on acute exudative or suppurative inflammations. [Dewit-Leunis]

*A. incana* still has an antithrombotic action but is indicated for a less exudative and more evolved inflammatory condition. [Dewit-Leunis]



From the point of view of serum proteins, while *A. glutinosa* strongly reduces hyper- $\alpha_1$  and hyper- $\alpha_2$ -globulinemia and normalizes hyper- $\alpha$  and hyper- $\gamma$ -euglobulinemic states, *A. incana*, in addition to maintaining an action on hyper- $\alpha_1$  and hyper- $\alpha_2$  states, has a more pronounced normalizing action on hyper- $\gamma$ -globulinemia with hyper- $\beta$ -globulinemia and lipoproteins. Both increase serum albumin. [Dewit-Leunis, Piterà]

The tissue phases on which *A. glutinosa* acts are: 1 (activation), 2 (inflammation) and 4 (fibrosis). *A. incana* acts on phases: 2 (inflammation), 3 (deposition) and 5 (necrosis) [Dewit-Leunis].

The indications for these two remedies are given below and are taken from [Piterà].

## ***Alnus glutinosa***

### *Main features*

Experimental studies conducted by Pol Henry have shown that the *A. glutinosa* bud modifies the following biological parameters.

**Cytological and histological action:** it rebalances and stimulates the Reticuloendothelial System. It has general anti-inflammatory properties, acting on any type of organ or tissue inflamed by chronic inflammation.

**Action on blood coagulation and on the thromboelastogram:** it has antithrombotic properties, acting on the thrombophilic state.

**Stimulated cell lines:** it acts on the myelogram by stimulating the granulopoietic cell lineage, myelocytes, polymorphonuclear cells, granulocytes and the eosinophilic series.

**Lipoprotein and lipid metabolism:** it increases decreased cholesterol esters, favoring the conversion to lower molecular weight molecules.

**Protein metabolism:** it increases serum albumin. It strongly reduces hyper- $\alpha_1$  and hyper- $\alpha_2$ -globulinemia. Normalizes the states of hyper- $\alpha$  and hyper- $\gamma$ -euglobulinemia; ultimately it reduces  $\gamma$ -globulins and  $\alpha$ -globulins.

The organotropism of *Alnus glutinosa* buds is mainly addressed to the cardiovascular system (arterial system in general, cerebral and coronary arteries), the oral mucous membranes and the digestive system, the skin system and the central nervous system.

### *Main properties and essential clinical indications*

The main properties are: anti-inflammatory, antithrombotic, global hypocoagulant, hypotensive, blood vessel regulating and vasoprotective. The therapeutic action of *A. glutinosa* bud is mainly directed to the walls of the arterial vessels of the brain (encephalic arteries) and heart (coronary arteries) on which it produces an anti-inflammatory, antithrombotic and toning effect, with consequent improvement of the brain and myocardial circulation. The bud extract also exerts an anti-inflammatory action on the digestive mucous membranes and stimulates the adrenal cortex similarly to *Ribes nigrum*. *A. glutinosa* is the remedy for exudative inflammation and dominates the processes of post-inflammatory fibrinosis. It is active in all mucosal inflammatory syndromes or sequelae, whatever the compromised tissue be. It is the

complementary remedy to antibiotics in the treatment of inflammatory sequelae not resolved on the tissue and circulatory level; in less evolved stages it can replace the antibiotic (Pol Henry). It also acts on urea and uric acid (hyperuricemia). It regulates endorphins secretion (with *Crithmum maritimum*), and therefore modulates the mood by reducing the excitement in subjects with autonomic lability. *A. glutinosa* is more active in cases where the patient's electrophoresis shows a marked increase in  $\alpha_1$  and  $\alpha_2$ -globulins. Its essential clinical indications are thrombotic arteritis, phlebitis, retinal thrombosis, thrombophlebitis, outcomes of cerebrovascular diseases (cerebral ischemia, cerebral haemorrhage), cerebral deficiency in the elderly, migraine and vasomotor headache, suppurative and ulcerative mucosal syndromes, urticaria from food or drugs. *A. glutinosa* is the gemmoderivative for every mucosal inflammatory syndrome in the acute suppurative phase: bronchitis, cystitis, cholecystitis, colitis, gastritis, otitis, pyelitis, rhinitis, sinusitis, tracheitis (with complementary remedies) with a diffusive tendency.

## ***Alnus incana***

### *Main features*

Experimental studies conducted by Pol Henry have shown that the *A. incana* bud modifies the following biological parameters.

**Action on coagulation and on the thromboelastogram:** it has a clear action in lengthening the longitudinal constants and a slight action in shortening the transverse constants.

**Stimulated cell lines:** myelocytes, eosinophilic granulocytes; it stimulates granulopoiesis and, very slightly, eosinophilia.

**Protein metabolism:** it modifies the electrophoretic plot by increasing the albumins and reducing hyper- $\gamma$ -globulinemia. *A. incana* acts on an even more advanced inflammatory syndrome than *A. glutinosa*, since in addition to the hyper- $\alpha_1$ -hyper- $\alpha_2$ -globulin syndrome, *A. incana* normalizes a clear hyper- $\gamma$ -globulinemia with hyper- $\beta$ -globulinemia and lipoproteins.

The organotropism of the buds of *Alnus incana* is oriented towards the female genital organs (breasts and uterus), the genital mucous membranes, the skeletal system.

### *Main properties and essential clinical indications*

Unlike that of *A. glutinosa*, *A. incana* bud organotropism is also oriented towards the female genital system and the skeletal system. The bud extract is indicated in uterine fibroma and myoma, in fibroadenotic and fibrocystic mastopathy, galactorrhea, mastodynia, osteoporosis, chronic inflammatory diseases of organs, mucous membranes and tissues with organ sclerosis and tissue damage, liver parenchyma alterations, thrombotic diseases, flu syndromes. *A. incana* profoundly modifies the characteristics of non-malignant cells tending to tissue sclerosis and the tissue response to inflammatory mediators. It has anti-inflammatory properties on any type of chronically inflamed tissue; it has a positive effect on the physiological functions of the connective tissue; it possesses antithrombotic, antisclerosis and anti-osteoporotic action.

## Homeopathy

*Alnus* species have not been thoroughly proved in homeopathy. Very few indications came from Scholten, Cooper and Clarke.

### *Alnus glutinosa*

#### **Mind**

Keeps promises and appointments [Scholten].

Irritable, < appointments neglected [Scholten].

Does not perceive his highest truth in each life experience [Scholten].

#### **Body**

Energy: weak, astringent, inflammations, swellings, ague [Scholten].

Head: apoplexy; brain insufficient [Scholten]. Heaviness in head as after being drunk the night (Cooper) [Clarke]

Nose: hayfever; rhinitis, chronic; sinusitis [Scholten].

Lungs: inflammation [Scholten].

Throat: sore throats, pharyngitis [Scholten].

Stomach: dyspepsia [Scholten].

Rectum: Pain in rectum after stool (Cooper) [Clarke]

Limbs: phlebitis [Scholten].

Skin: inflamed, burnt skin, wounds [Scholten]. Eruptions on the skin alternating with diseased conditions of mucous membrane. (Hale) [Clarke]

### *Alnus rubra (= Alnus serrulata)*

#### **Mind**

Stranger in his own family [Scholten].

Has to behave differently to conquer his identity [Scholten].

Busy, industrious [Scholten].

Mind dull, confused, concentration difficult [Scholten].

Sad < daytime, > evening [Scholten].

Singing [Scholten].

Dream: amorous; animals biting him, buildings, friends, houses, hotels; lost in a city; water running, wonderful wood [Scholten].

Dreams: being approached amorously; animals biting, into arm; buildings, hotel, houses; friends; lost in an unknown city, house or in a hotel; running water; wonderful wood; wood. [Scholten]

### **General**

Desire: brown rice [Scholten].

Aversion: meat, coffee [Scholten].

Food: < coffee, green peppers; milk, yoghurt [Scholten].

### **Body**

General: marasmus, waste; glands lymphatic, enlarged, inflamed, chronic; subaxillary [Scholten].

Infection: syphilis, gonorrhoea [Scholten].

Head: heavy after being drunk [Scholten].

Mouth: ulcers [Scholten].

Throat: ulcers [Scholten].

Heart: pain [Scholten].

Chest: mammary pain, swelling before menses [Scholten].

Stomach: indigestion, lack of gastric and intestinal secretions, slow digestion [Scholten].

Rectum: pain after stool [Scholten].

Urinary: bladder motion; kidney stones; haematuria [Scholten].

Female: menses absent, amenorrhoea; burning pain from back to pubis; leucorrhoea; cervix eroded, bleeds easily [Scholten].

Limbs: rheumatism [Scholten].

Skin: eczema, boils; cracks, ulcers, boils, stitching, sticking, left iliac region; eruptions, chronic, alternating with diseases of the mucous membranes; purpura haemorrhagica; poison-oak [Scholten].

## ***Alnus incana***

### **Body**

General: hot swellings, ulcers, inflammations, intermittent fevers, bleeding, hemostatic, astringent, febrifuge [Scholten].

Head: headache [Scholten].

Eyes: sore [Scholten].

Mouth: ulcers [Scholten].

Throat: inflammation of tonsils; diphtheria [Scholten].

Lungs: haemorrhage [Scholten].

Stomach: nausea, vomiting [Scholten].

Rectum: piles [Scholten].

Urinary: urine scanty [Scholten].

Female: repels milk when applied to the breast [Scholten].

Limbs: sprains, bruises, backache [Scholten].

Skin: swelling, pimples, heavily bleeding wounds [Scholten].

## NOTES

### Notes on humors

According to the Hippocratic-Galenic medicine, four humors rule the human body:

- *Bile* (or *Yellow Bile*), corresponding to the Fire element, responsible for all the caloric activities of the human body, both in a physiological sense (e.g., body heat) and in a pathological sense (fever, inflammation, etc.);
- *Blood*, corresponding to the Air element and to the physical blood;
- *Phlegm* (also called *Pituita* or *Lymph*), corresponding to the Water element, responsible for everything that is fluid in the body (body fluids, lymph, blood plasma, synovial fluid, cerebrospinal fluid, etc.)<sup>3</sup>;
- *Melancholia* (also called *Black Bile*), corresponding to the Earth element, responsible for everything that is hard and structured (bones, teeth, but also growths, polyps, stones, tumors, etc.).

Heat and body fluids are governed by Yellow Bile and Phlegm respectively. When there are no further specifications, the terms “heat” and “fluids” can be used, in this text, to indicate the corresponding humor.

The functioning of the whole body is governed by the mixing (*crasia*) of such humors: if the ratio between the humors is proper (we speak of *eucrasia*), the body functions at its best and the health is guaranteed; if they are blended improperly (we speak of *discrasia*), illness results.

A humor is defined *correct* when both its “quantity” and its “quality” are proper; when it prevails over the others, generating dyscrasia, it is said that it is *superabundant*, and when its quality is not appropriate it is said that it is *corrupt*. We say in general that a humor is *perverse* when it is overabundant or corrupt. In this text, in order to facilitate comparisons between different systems of medicine, we resort to an extension with respect to the classical conception and define a humor as “perverse”:

- when its “quantity” is not optimal, that is, it is excessive (superabundant humor) or deficient (deficient humor) with respect to the condition of eucrasia (the classical theory allows only excess; deficiency is due to the prevalence of another humor with opposite qualities), or
- when its “quality” is different from the physiologically appropriate one (corrupt humor)<sup>4</sup>.

An excess of heat in the body can overheat and “cook” the humors, altering their characteristics. Phlegm thickens and becomes more viscous, giving rise to the so-called *thickened Phlegm*. If the excess heat is important or lasts for a long time, all humors can end up “burning” (in

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<sup>3</sup> In this sense, it is conceptually different from the *Phlegm* of Chinese medicine, which corresponds specifically to the *thickened Phlegm* of humoral medicine when it is located in the upper part of the organism.

<sup>4</sup> Melancholia, for example, can be in excess with respect to the physiological condition of eucrasia (generating excessive structures) or in deficit (generating deficient constructions), but it can also be generated by the combustion of humors by heat (see below); in the latter case, it is always perverse (therefore it is perverse in quality rather than in quantity). In classical humoral medicine these three conditions are usually not so sharply distinguished from each other.

this case we call them *adust humors*). When burned, humors always produce Melancholia. Unani-Tibb medicine provides four types of perverse melancholia produced by the combustion of humors: *malankholia damvi*, produced by the combustion of Blood; *malankholia safravi*, produced by the combustion of Yellow Bile; *malankholia balghami*, produced by the combustion of Phlegm (generally due to fermentation) and *malankholia saudawi*, produced by the combustion of “correct” Melancholia.

Phlegm is cold in the first degree and damp in the second and is a mobile and flowing humor. When coldness becomes excessive, however, the Phlegm can thicken and become viscous (cold indeed makes viscous), producing once again *thickened Phlegm*.

Phlegm itself, when it accumulates and stagnates for any reason (for example due to a lack of heat or an excess of Tension, see below), generates, by “compression”, secondary heat that can condense the humor and make it viscous.

Furthermore, in nature stagnant dampness favors fermentation and putrefactive processes, especially when there is concomitant heat. Also in the human body an accumulation or stagnation of Phlegm may cause the onset of fermentation or putrefaction (phenomena that today’s medicine generically indicates as *infections*), which are certainly supported by the natural heat of the body and by any secondary heat generated by compression of the Phlegm. Moreover, the fermentation and putrefaction generate further secondary heat<sup>5</sup>. All these phenomena are characterized by the coexistence of perverse dampness and heat, even if, to be more precise, they should be described as due to the presence of pathological dampness associated with a certain degree of perverse heat (it is therefore more correct to think of them as due to “heated” humidity rather than moist heat). From a clinical point of view, the disorders characterized by this humoral picture include the phenomena known as *putrefaction*<sup>6</sup> which are manifested by the emission or collection of purulent material, often even hardened (e.g., abscesses)<sup>7</sup>.

The conditions described so far (thickened phlegm, adust humors, putrefaction) are perverse not due to an incorrect quantity of the humors, but because of their “bad” quality.

### ***Tension***

In this text, for the exclusive purpose of simplifying any comparisons between different systems of medicine (for example, Chinese and humoral), we add the pseudo-humor *Tension*<sup>8</sup>, which is responsible for the “functionality” of the whole body or its parts (e.g., the organs). In this sense, it corresponds to the *Qi* of Chinese medicine but also to other concepts, such as that of the *Four Virtues* (attractive, retentive, alterative and expulsive) of organs according to Galen (see for example [Giannelli]) and it can also be related to the *vasoconstriction* and *vasorelaxation* conditions of Physiomedicalism and to Matthew Wood’s *Constriction* and *Relaxation* tissue states [Wood].

Tension, defined as a *pseudo-humor* because it is not contemplated by the classical humoral theory, can be thought of as formally derived from Fire to which a sort of “constraint”,

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5 The fermentation and putrefaction processes are generally exothermic or generate a “hot” response from the human body..

6 Corresponding to the *toxic heat* of Chinese medicine. This condition also includes diseases characterized by macular or maculopapular eruptions (e.g., exanthematous diseases).

7 The conditions known as *Dampness/Heat* in Chinese medicine (which include, for example, problems often related to the urinary tract or gallbladder, some cases of jaundice, etc.) also fall within this picture.

8 Name borrowed from Matthew Wood’s tissue states model [Wood].

“limitation”, or “obstacle” has been applied. Like Fire, in fact, it is a form of “energy”, mobile in itself and activating; but whereas Fire tends to move only upwards and centrifugally, thus expanding indefinitely, the movement of Tension is more “structured” and so to speak “oriented” towards specific, defined forms and modalities. We can therefore see it as a kind of Fire to which a structuration (element of “terrestrial” nature) has been applied.

We can resort to an image taken from everyday life as an example. If we pour water on the fire, the latter goes out and the water disperses or evaporates. If we place a hard (i.e., cold and dry) element above the fire (for example, a terracotta or metal container) which prevents the water to directly “mix” with the fire, we are able to let the water heat up without dispersing, and to use it warm for specific purposes (for example, to cook food). By applying a cold and dry “obstacle” (the container) to the fire, we “functionalize” the heat that otherwise would disperse or make the water disperse or evaporate.

Tension can therefore be described, in a humoral sense, as derived from a sort of “functionalization” of Fire by a factor (a principle rather than a material cause) of a cold and dry nature. For this reason Tension is hot and dry, with a lower degree of heat than Fire (because of the cooling due to functionalization).

Even Tension can be correct or perverse and, in the latter case, it can be perverse both in quantity (excess or deficit of Tension) and in quality (think for example of the *Qi ni*, or *counterflow Qi*, of Chinese medicine). Given the correspondence, described above, of Tension with Qi, the various manifestations of perverse Tension will typically have a more or less specific correspondence in Chinese medicine (for example, “Tension deficiency” corresponds to “Qi deficiency”). In general, Tension imbalances correspond to Qi imbalances and/or to “Wind” (intended as a pathogenic manifestation).

An imbalance in Tension can also affect other humors, potentially making them perverse. For example, an excess or a stasis (stagnation) of Tension can prevent the body fluids from being moved correctly, generating stagnation of Phlegm and/or Blood; Tension stagnation can generate “compression” which in turn can produce heat (Chinese medicine speaks, for example, of “implosion of stagnant Qi” which generates Fire, understood here not as the element but as a specific manifestation of heat).



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