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(54) Title: NATURAL MEDICINAL COMPOUND

(57) Abstract: This invention refers to the sector of drugs intended for both human and animal use, and it particularly concerns a natural medicinal compound that contains a tannin-based vegetal active ingredient combined with carriers and with a synergic effect, wherein said vegetal active ingredient is natural chestnut extract (*Castanea sativa*), with tannin as the highest constituent substance, and said natural chestnut extract is contained in the compound in a weight rate between 5% and 80%.



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NATURAL MEDICINAL COMPOUND

* * * * *

This invention refers to the sector of drugs intended for use both on humans and animals, and it particularly concerns a natural medicinal compound based on a vegetal active ingredient.

The invention belongs to the field of medicinal compounds used for treating:

- inflammation-related diseases;
- viral diseases;
- 10 - degenerative diseases such as osteoporosis;
- diseases caused by bacteria or fungi;
- dermatitis and psoriasis;
- lesions, ulcers, wounds, burns, insect bites.

Currently, cortisone-based drugs or common NSAIDs (non-steroidal anti-inflammatory drugs) that can be taken in various forms are prescribed for the treatment of inflammatory diseases: for topical use in salves, gel, ointments and dermatological creams, or for oral use in tablets or capsules.

Synthetic drugs are usually prescribed for the treatment of viral diseases, or said diseases are preventively countered by vaccines, while various supplements (based on calcium, magnesium, vitamins, etc.) are taken for degenerative diseases, such as osteoporosis.

Antibiotics and drugs typical of conventional medicine are currently prescribed for the treatment of diseases deriving from bacteria or fungi, dermatitis or for the regeneration of tissues that have suffered lesions and burns.

Disadvantageously all these treatments have contraindications.

NSAIDs applied on the skin can encourage phenomena such as photosensitisation, while cortisone-based drugs can facilitate the development of mycosis and alter immune defences. Furthermore, uninterrupted consumption both of NSAIDs and of cortisone-based drugs
5 can cause gastric damage and ulcerous lesions in mucous tissue and, more seriously, adrenal insufficiency.

Disadvantageously vaccines contain toxic substances: heavy metals, carcinogens, strong antibiotics, substances that hyperexcite the immune system of the patient.

10 Vaccines can, in fact, cause severely disabling diseases in the vaccinated person, and the principal diseases that can be triggered by vaccines include: ischemia, intoxication, inflammation, genetic mutation of mitochondrial DNA, mutations transmitted from the mother to the foetus, immunodepression, etc.

15 Supplements are recommended for cases in which the body presents a deficiency of certain nutrients: therefore, they do not possess actual curative properties, but are necessary to supplement a normal diet by completing it. Hence, they have a relatively bland effect, and are not very effective treatment for serious diseases.

20 In some cases, drugs based on natural vegetal extracts can be used as an alternative to conventional drugs or combined with synthetic active ingredients.

The use of polyphenols and, particularly, of tannin of vegetal origin is known to either fight or prevent the development of certain diseases.

25 Tannins are polyphenol compounds that are common in vegetal cells, and their content is high in the bark of plants, such as oak, chestnut, spruce and acacia.

Tannins are commonly used in the leather and wine manufacturing industries, but they also have several pharmacological applications: administered either topically or orally, they have an antibacterial and antifungal effect, administered only orally they have an anti-diarrhoeic effect, administered only topically they have a vasoconstrictive effect; they
5 are used for regeneration of tissues with wounds and burns and, lastly, they are used for the treatment of dermatitis.

Tannin-based compounds, which are currently used only topically in pharmacology, include a very low percentage of tannin, below 5% of their
10 weight, to avoid problems of absorption, difficult penetration of the active ingredient and, hence, wastage of the drug, and to avoid the development of unhaesthetic skin patches on the application surface.

Disadvantageously the curative effect of salves or creams with such a low percentage of tannin is rather limited.

15 These disadvantages resulting from the application of tannin-based compounds are a strong reason for prejudice on the part of the average technician who is, therefore, reluctant to study new formulations of medicinal compounds containing tannin and, especially, new potential applications of the same for the treatment of diseases that are commonly
20 treated with other drugs.

This invention has the principal scope of providing a medicinal compound entirely based on natural and vegetal active ingredients for the treatment of all the aforementioned diseases, without contraindications.

Again, scope of the invention is to create a medicinal compound for
25 easy and rapid application, with a good degree of absorption and excellent tolerability for the body that uses it.

With these objectives, the inventors surprisingly discovered that, for

diseases caused by bacteria or fungi, or when there are lesions, burns, insect bites or degenerative diseases, increasing the percentage of tannin and using, instead of pure tannin, a natural extract containing a mixture of tannin, polyphenols and other nutritional elements and adding appropriate carrier means, produces better curative efficacy along with good absorption of the product.

Even more surprising the discovery that of all tannins derived from the bark of plants, the most effective is chestnut tannin (*Castanea sativa*), which is contained in a remarkable percentage in natural chestnut extract (NCE), which also has a powerful antiviral, anti-inflammatory and anti-aging action.

The aforementioned aims are achieved with a natural medicinal compound containing a tannin-based vegetal active ingredient combined with carriers and with a synergic effect, characterized in that said vegetal active ingredient is natural chestnut extract (*Castanea sativa*), with tannin as the lightest constituent substance, and said natural chestnut extract is contained in the compound in a weight rate between 5% and 80%.

Advantageously the percentage of tannin contained in the natural chestnut extract is about 77%.

In a first embodiment, said compound is a medicinal cream wherein the natural chestnut extract is present in a weight rate between 40% and 50%, and said carrier means are in a zinc oxide cream base.

In a second embodiment, said compound is a medicinal powder wherein the natural chestnut extract is present in a weight rate between 5% and 50% and said carrier means are inert excipients in powder.

In a third embodiment, said compound is a medicinal ointment wherein the natural chestnut extract is present in a weight rate between 5% and

80% and said carriers are vaseline or synthetic or vegetal oils.

In a fourth embodiment said compound is a medicinal suspension wherein the natural chestnut extract is present in a weight rate between 5% and 50% and said carrier means are water-based and comprise cross-
5 linkers.

In a fifth embodiment, said compound is a medicinal solution wherein the natural chestnut extract is present in a weight rate between 5% and 50%, and said carriers are water-based and comprise alkaline substances.

10 In a different embodiment said medicinal compound is an emulsion of said medicinal solution in oil.

In a sixth embodiment said compound is a medicinal capsule wherein the natural chestnut extract is present in a weight rate of 40% and said carrier means are gentian, equisetum and impalpable calcium carbonate.

15 Compared to current tannin-based compounds that are topically used with antibacterial, antifungal and vasoconstrictive effects, with a regenerating effect on tissues presenting lesions, burns or dermatitis, the drug according to the present invention is highly effective, easy and quick to absorb, free of undesirable side-effects, such as formation of scabs or
20 of particular skin patches at the site of application.

Even more advantageously, the medicinal compound based on natural chestnut extract according to the present invention, appropriately dosed and conveyed, forms creams, emulsions, suspensions, solutions, etc. suitable ideal for treating the most diverse diseases, ranging from viral
25 diseases, such as herpes simplex or herpes zoster, to psoriasis, or soft oedematous cellulite.

The use according to the present invention of natural chestnut extract

to form capsules, for instance, for treating osteoporosis, or for normalising cholesterol levels is of even greater advantage.

These and other aims, advantages and characteristics are specified in the description below of some preferred embodiments, herein listed only
5 as a non-limiting example.

In all the following applicative examples, the basic active ingredient of the compounds is natural chestnut extract, commonly known as NCE, wherein the most precious part is chestnut tannin (*Castanea sativa*), which is present as the highest constituent substance.

10 Said natural chestnut extract is obtained by hydrolysis of chestnut wood (*Castanea sativa*) without the addition of foreign or synthetic substances.

During the extraction process, chestnut trunks are mechanically cleaned of the bark and branches and crushed to pieces, which are later washed and channelled to an autoclave for processing at high
15 temperatures and pressures.

The aqueous solution obtained contains a mixture of all polyphenols and other nutritional elements typical of natural chestnut extract: hydrosoluble polyphenols, simple sugars, lignen, mineral salts, cellulose and hemicellulose.

20 Natural chestnut extract powder obtained through a known technological process starting from the aqueous solution does not contain only pure tannin, but tannin combined with other natural substances deriving from the extraction process.

Natural chestnut extract powders available on the market have a pure
25 tannin content between 60% and 99%.

The following is, for instance, the technical fact sheet of a natural chestnut extract wherein the pure chestnut's tannin content is 77%. This

fact sheet underscores the specific chemical and physical parameters thereof, by which the best experimental results have been achieved, and the percentages of the constituent elements thereof.

PARAMETER	UNITS	MEAN VALUE
TANNIN	%	77
NOT TANNIN	%	16
T/Nt ratio	%	4.5
HUMIDITY	%	7
DRY SUBSTANCE	%	92
ASH	%	1.6
PH	%	3.6
ROUGH FIBER	%	<0,5
NDF	%	2
ADF	%	1.2
ADL	%	0.89
RAW PROTEINS (Nx065)	%	3.74
TOT NITROGEN SUBSTANCES	%	0.8
RAW LIPIDS	%	0.58
MINERALS	%	1.5
TOTAL GLUCIDS,	%	10
with reducing agents	%	4.5
SULPHUR	mg/Kg	1800
PHOSPHORUS	mg/Kg	780
CALCIUM	mg/Kg	1300
MAGNESIUM	mg/Kg	1000
POTASSIUM	mg/Kg	1900

SODIUM	mg/Kg	1400
IRON	mg/Kg	80
MANGANESE	mg/Kg	190
COPPER	mg/Kg	<0.1
ZINC	mg/Kg	4
LEAD	mg/Kg	<1
CADMIUM	mg/Kg	<0.2

The aforementioned natural chestnut extract with 77% tannin content was used in the applicative examples below.

Example No. 1

According to a preferred embodiment to produce the medicinal
5 compound according to the present invention, the water-based solution used to produce it contains 30% weight rate of natural chestnut extract.

Synergic alkaline substances, such as NOH, KOH or amine, have been added to water to make tannin soluble.

Tannin is, in fact, an acid substance that is salified and dissolved by the
10 addition of alkali. Furthermore, the solution can be thickened with known techniques to obtain the desired fluidity.

Advantageously, when the solution is applied, for instance, on a wound, the salt penetrates into the skin which has an acidic pH, the tannin contained in the natural chestnut extract is hydrolysed and restored to the
15 acid form, which is the biologically active one, and encourages cicatrisation.

For instance, excipients, which act synergically and amplify its beneficial effect, can be added to this basic solution. Said excipients can be for example: zinc oxide, dry or fluid aloe extracts, calendula or other,
20 essential oils such as *melaleuca alternifolia* (tea tree) or rosemary.

Example No. 2

According to another embodiment to produce the medicinal compound according to the present invention, natural chestnut extract powder can be encapsulated.

- 5 Specifically, capsules containing 500 mg of natural chestnut extract powder are advantageously used to regularise the digestive system, control intestinal bacterial flora, regulate blood cholesterol levels, encourage the circulatory system, and treat viral hepatitis type C.

10 Instead, capsules containing 200 mg of natural chestnut extract powder, 100 mg of gentian, 100 mg of equisetum and 100 mg of impalpable calcium carbonate are advantageously used to treat osteoporosis.

Tannin contained in capsules dissociates the calcium carbonate present in said capsules, but also the calcium carbonate ingested by the patient with food, releasing positive Ca^{++} ions. This dissociation increases the capacity to absorb calcium in the ionic form and makes it bioavailable and easily absorbable by the body and by the skeletal system with subsequent beneficial effects.

Laboratory Test No. 1

- 20 The efficacy, *in vitro*, of some medicinal compounds based on natural chestnut extract against bacterial species of avian origin has been tested.

The test made use of bacterial strains from the IZSLER collection. A concentration of 10^6 cfu/ml was prepared.

The bacterial strains were planted in dishes containing culture media.

- 25 For liquid products, disks soaked with 50 μL of product were positioned on the culture media. Solid products were placed in wells cut in the centre of culture media.

The diameter of the inhibition halo including the diameter of the disk or of the well (12.7 mm) was read after 24 hours of incubation at 37°C, and results were recorded in the table below.

5

* * * * *

PRODUCT	FORM	S. typhimurium	S. aureus	S. aureus	S. aureus	S. aureus	E. coli	C. neoformans	S. aureus
Dispersion of NCE in vaseline and vegetal oils such as to obtain a compound containing 40% of pure tannin	solid	32	37	33	34	28	25	36	
Dispersion of NCE in vegetal oils such as to obtain a compound containing 40% of pure tannin	paste	19	17	18	20	0	0	20	
Hydroglycaemic solution with thickening excipients such as to obtain a compound containing 10% of pure tannin	gel	18	17	20	22	0	15	19	
Hydroglycaemic solution with thickening excipients such as to obtain a compound containing 10% of pure tannin	spray	25	35	32	36	18	25	33	

CLAIMS

1. Natural medicinal compound containing a tannin based vegetal active ingredient combined with carriers and with a synergic effect, characterized in that said vegetal active ingredient is natural chestnut extract (*Castanea sativa*), with tannin as the highest constituent substance, and said natural chestnut extract is contained in the compound in a weight rate between 5% and 80%.
5
2. Medicinal compound according to claim 1, characterized in that the tannin content in the natural chestnut extract is approximately 77%.
- 10 3. Medicinal cream, characterized in that it comprises the medicinal compound according to claim 1, wherein said natural chestnut extract is contained in a weight rate between 40% and 50% and said carriers are in a zinc oxide cream base.
4. Medicinal powder, characterized in that it comprises the medicinal compound according to claim 1, wherein said natural chestnut extract is contained in a weight rate between 5% and 50% and said carriers are inert excipients in powder form.
15
5. Medicinal ointment, characterized in that it comprises the medicinal compound according to claim 1, wherein said natural chestnut extract is contained in a weight rate between 5% and 80% and said carriers are vaseline or synthetic or vegetal oils.
20
6. Medicinal suspension, characterized by the fact that it comprises the medicinal compound according to claim 1, wherein said natural chestnut extract is contained in a weight rate between 5% and 50% and said carrier means are water-based and include cross-linkers.
25
7. Medicinal solution, characterized in that it comprises the medicinal compound according to claim 1, wherein said natural chestnut extract

is contained in a weight rate between 5% and 50% and said carrier means are water-based and comprise alkaline substances.

8. Medicinal emulsion according to claim 7 characterized in that it contains oil.
- 5 9. Medicinal capsules characterized in that they comprise the medicinal compound according to claim 1, wherein said natural chestnut extract is contained in a weight rate of 40% and said carriers are gentian, equisetum and impalpable calcium carbonate.
10. The use of said medicinal compound according to claim 1, suitable
10 for treating inflammations, viral diseases, bacterial diseases, wounds, burns and osteoporosis.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2011/000288

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K36/49 A61K9/00 A61P17/00 A61P19/10
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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