LPPAM is a leading player in the market for analysis of nutraceutical and pharmaceutical products in the field of phytotherapy.

This remarkable evolution, supported by the market boom in phytotherapy, is primarily the result of a constructive approach based on our unique know-how and values. These are the fundamental principles in the identity of the LPPAM.

In this catalogue, you will find our key areas of expertise in the field of phytotherapy.

Our laboratory is certified and accredited to perform your analysis and uses state-of-the-art equipment.

Our entire team and I are always at your disposal to assist you in developing your projects.

More than ever looking to the future, LPPAM, one of the most innovative players in the industry, intends to pursue a development strategy and expand its activities to offer services and products that meet and exceed your expectations.

Cordially,

Edmond BOURNY
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**LPPAM GENERAL TERMS AND CONDITIONS OF SALE** 66
LPPAM is a Pharmaceutic independent Lab located in Buis les Baronnies (Drôme - France) and perform analysis tests according the customer’s guidelines on herbal products and essential oils.

LPPAM as extensive expertise in the identification and quantification of active substances in highly complex solutions and complex matrices.

The laboratory LPPAM offers a range of specific analytical and regulatory services: analytical and microbiological analysis; methods validation, method development and registering new products, solve customers’s issues.

In this context the protocols and methods are built closely with the customers in order to exactly meet the scope according to your guidelines.

Our expertise can be used for the R&D department, the quality control and the marketing of the food, pharmaceutical and cosmetic company.

Our services enable you to operate in a more sustainable manner by improving quality and productivity, reducing risk, verifying compliance and reducing time to market. With passion and a reputation for integrity, entrepreneurship and innovation, we offer you an unmatched services that you can truly rely on to make your goals a reality.

When working with LPPAM, clients located in France benefit from Research Tax Credit.

We ensure the safety and quality of your raw materials and finished products by providing the best nutritional and nutraceutical testing services available, worldwide.

Our Vision: «Global experts in natural product safety and quality»
Our Purpose: «Together, build and protect consumer confidence»
Analysis, development, quality control and regulatory affairs of herbal medicinal products, food and cosmetics are our strengths.

Publication
Welcome to the publication of our website, copies of public documents and scientific publications from LPPAM are available for use and for distribution. You also can subscribe to the newsletter:
http://www.lppam.fr
QUALITY SYSTEM

ANSM REGISTRATION
LPPAM is ANSM registered and inspected by French authority. Every method is in accordance with acceptable national and international standard methods including European Pharmacopoeia (EP), USP Pharmacopoeia (USP), British Pharmacopoeia (BP), and the Association of Analytical Chemists (AOAC). We are audited by the ANSM Health. ANSM Registration n° M 09/197 (http://www.ansm.sante.fr)

ISO/IEC 17025
LPPAM is dedicated to provide its customers reliable, high quality, cost effective services. In line with our emphasis on high quality analytical results, LPPAM received ISO 17025 accreditation in September 2008: “General Requirements for the Competence of Testing and Calibration Laboratories” addresses technical competency of the testing laboratory and specifically, a laboratory’s ability to produce precise and accurate test and calibration data. For further details, please view the accreditation certificate on the website (http://www.cofrac.fr). Accreditation number: 1-1840 (Program 131-1).

ISO 9001 (VERSION 2008)
Agreement number: FR007240 Affair n° 6023723

CUSTOMER SERVICE
► To ensure client satisfaction by being responsive to their requirements and exceeding their expectations
► To provide value-added services to our clients
► To seek innovative solutions that meet our clients’ objectives

QUALITY
► Quality that helps provide accurate results in due time
► To use the most appropriate technologies and processes
► To constantly aim at improving or modifying our processes to offer you the best service

COMPETENCE AND TEAM SPIRIT
► To use skilled and talented teams
► To invest in training and create attractive career opportunities
► To recognise and encourage exceptional performance

INTEGRITY
► To engage in ethical behaviour in all our activities
► To respect our clients and our teams
► To contribute to the protection of the environment and natural resources

OUR VALUES

Our core values
The market of herbal drug-based food products is expanding strongly both in Europe and in other parts of the world. LPPAM is able to meet the requirements of the manufacturers via its skills, and guarantees the safety of medicinal plants and their conditions of use.

To ensure safety:
Analysis for assessing the quality of herbal medicine

The market of herbal drug-based food products is expanding strongly both in Europe and in other parts of the world. LPPAM is able to meet the requirements of the manufacturers via its skills, and guarantees the safety of medicinal plants and their conditions of use.

Cultivate your expertise and stay one step ahead of the competition...

350,000
This is the total number of species that have been identified in the world, which represent a unique reservoir of molecules with nutritional and therapeutic properties. (Source: Natural Product Chemistry Institute, CNRS).

398
This number of medicinal plants reserved for pharmacists in France.

1,029
This is the number of medicinal plants from the BELFRIT list. At the European level, in July 2013, the BELFRIT project initiated by Belgium, France and Italy helped in establishing a common list of plants that can be used in food supplements. This was a first step towards a future European harmonisation as well as a support aimed at the creation of a regulatory framework specific to food supplements.

350,000
This is the total number of species that have been identified in the world, which represent a unique reservoir of molecules with nutritional and therapeutic properties. (Source: Natural Product Chemistry Institute, CNRS).

547
(French Official Gazette) no 0163 dated 17 July 2014 - Order dated 24 June 2014 establishing the list of plants, other than mushrooms, which are authorised for use as food supplements and the conditions for their use.

546
This is the number of medicinal plants registered in the French pharmacopoeia, 11th edition, of which 416 are in list A and 130 are in list B. (Source: ANSM Pharmacopoeia 11th edition, updated on 6 March 2014 at www.ansm.sante.fr, section: Activities > Pharmacopoeia).

148
This is the number of medicinal plants that have been liberalised and can be sold over the counter, and which can be marketed outside the officinal network. (Source: Decree no 2008-841 dated 22 August 2008 pertaining to the sale of medicinal plants registered in the Pharmacopoeia, to the public).

398
This number of medicinal plants reserved for pharmacists in France.
Be confident in your GMP compliance analysis. An independent laboratory specializing in natural product analysis.

Expertise with over 500 species of botanical.

LPPAM offers a comprehensive portfolio of powerful analytical techniques to help clients monitor the safety, composition, authenticity, origin, traceability and purity of natural ingredients.
A competence acknowledged by the leading players in the industry.

Its wide range of services, its commitment to quality and innovation and its status as an expert gives it a unique position among laboratories. These characteristics sought by numerous clients who want the best protection for their products and brands, have enabled LPPAM to develop close long term relationships with pharmaceutical companies, the food and distribution industry as well as other businesses.

Recognized excellence in the field of analysis of phytochemical markers.

LPPAM is committed to using the advances in bio-analysis in the field of phytotherapy for the betterment of our health and the safety of what we eat. LPPAM is a leader in the field of analytical services and expertise for private companies in the sectors of Pharmaceuticals, Food and nutraceuticals.

A comprehensive range of services and unmatched expertise.

LPPAM provides its clients an unrivalled portfolio of over 500 specific analytical methods for studying the safety, identity, purity, composition, authenticity and origin of biological substances and products. The reliability and precision of the analytical data allows our clients to make appropriate decisions in the light of the risks encountered, meet ever.
Content

▶ Compendial (USP, Ph. Eur.) & non Compendial methods testing
Our services are compliant with GMP (French regulatory agency for human pharmaceuticals - ANSM). LPPAM rigorously ensures compliance with the ethics of its operations:
• Analysis of bioactive compounds in your ingredients, foods and dietary supplements (Polyphenols, carotenoids, vitamins, polycosanols, Epigallocatechingallate, tannins, etc.)
• Analysis of specific molecules (valeric acid, ginsenosids, monacolin K, stevia, etc.)

▶ Bioanalysis
The measure of the antioxidant power in vitro tests (FRAP method, FRAP value).

Microbiological purity
LPPAM performs the total viable count, the absence of pathogenic microorganisms – and identifies these by means of biochemical and molecular biological methods. The results are evaluated according to recognized criteria (medicinal teas, drug and extract preparations as well as finished medicines according to corresponding categories of the European Pharmacopoeia).

Trace Analyses for Herbal Products
(Analytical control of contaminants and residues – heavy metals, mycotoxins and pesticides)
LPPAM offers you a comprehensive package of services for all matters relating to the analysis and assessment of contaminants and residues, such as heavy metals, pesticides, mycotoxins or food irradiation:
- Heavy metals: Pb, Hg, Cd and As (according to pharmacopeia methods)
- Pesticides (according to pharmacopeia methods)
- Mycotoxins (according to pharmacopeia methods)
- Analysis of food irradiation (according to pharmacopeia methods)

Foreign organic matter
With purity testing, we determine for example whether a batch or sample is free of foreign matter. The LPPAM team identifies foreign extraneous organic and inorganic constituents inside the herbal material:
• Parts of the organ from which the drug is derived other than the part named in the definition and description or for which the limit is prescribed in the individual monograph
• Any organs other than those named in the definition and description
• Matter not coming from the source plant and
• Moulds, insects or other animal contaminant
• Invasive plant

Identification and quantification of illegal active compounds in plant food supplements
Our laboratory has expertise in the quality control of plant food supplements when:
• They are suspected to be added with an illicit molecule
• Are responsible for adverse effects in humans. We describe some of the cases faced by our group, where different analytical techniques were applied according to the class of substances considered (TLC, HPLC with different detectors, including HPLC/MS). Data on validation procedure are also reported.

We work closely with our clients to ensure test methods are appropriate for their intended use by identifying and using an appropriate scientifically valid method for each established specification.
In recent years, much attention has been given to the benefits of regular consumption of fruits and vegetables for human health. Pomegranate is such a fruit. It is extremely rich in antioxidants including soluble polyphenols, tannins and anthocyanins (Gil et al., 2000). These constituents have various biological effects such as the elimination of free radicals, inhibition of microbial growth and reduced risk of cardiovascular and cerebrovascular disease and some cancers (Mena et al., 2011).

More than the arils (fleshy covering around the seeds), which are already rich in antioxidants, it is its juice that provides the maximum antioxidant properties, since the whole fruit is pressed to extract it. It is therefore enriched with antioxidants present in large quantities inside the arils. Depending on the variety and the method of production, particularly limiting the heating during processing, the concentration of polyphenols may vary from single to double from one juice to another, and the absorption of its antioxidants also depends on the quality of the gut flora of each person. Table 1 represents most of the phenolic compounds present in the different organs of the pomegranate tree.

LPPAM offers you the possibility of performing these assays.
The “superfoods” in the crosshairs of LPPAM

The relentless pursuit of innovation in the field of health claims has led to an increased use of “superfoods”. A superfood is “highly nutritious food containing a large amount of vitamins, minerals, fibre, antioxidants, and/or phytonutrients”. LPPAM has developed qualitative and quantitative methods to assess the quality and authenticity of these herbal medicines and processed products.

LPPAM offers you the possibility of performing these assays.

<table>
<thead>
<tr>
<th>ENGLISH NAME</th>
<th>PLANT PART</th>
<th>CHEMICAL COMPOUNDS</th>
<th>METHOD</th>
<th>SCIENTIFIC NAME</th>
<th>FRENCH NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Açai</td>
<td>Fruit</td>
<td>Anthocyanins (Cyanidin-3-o-galactoside, Cyanidin-3-o-glucoside)</td>
<td>HPLC-DAD</td>
<td>Euterpe oleracea</td>
<td>Wassaï</td>
</tr>
<tr>
<td>Açai</td>
<td>Fruit</td>
<td>Polyphenols (vanillic acid, Syringic acid, orientin, homoorientin, vitexin, isovitexin, p-coumaric)</td>
<td>HPLC-DAD</td>
<td>Euterpe oleracea</td>
<td>Wassaï</td>
</tr>
<tr>
<td>Aronia</td>
<td>Fruit</td>
<td>Anthocyanin (cyanidin-3-galactoside, cyanidin-3-glucoside, cyanidin-3-arabinoside, cyanidin-3-xyloside)</td>
<td>HPLC-DAD</td>
<td>Aronia melanocarpa</td>
<td>Aronia</td>
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<tr>
<td>Baobab</td>
<td>Seed</td>
<td>Polyphenols</td>
<td>UV-Visible spectrophotometre</td>
<td>Adansonia spp.</td>
<td>Baobab</td>
</tr>
<tr>
<td>Baobab</td>
<td>Seed</td>
<td>Flavonoids</td>
<td>UV-Visible spectrophotometre</td>
<td>Adansonia spp.</td>
<td>Baobab</td>
</tr>
<tr>
<td>Baobab</td>
<td>Seed</td>
<td>Proanthocyanidol</td>
<td>UV-Visible spectrophotometre</td>
<td>Adansonia spp.</td>
<td>Baobab</td>
</tr>
<tr>
<td>Barley grass</td>
<td>Leaf</td>
<td>Flavonoids (expressed in isoorientin)</td>
<td>HPLC-DAD</td>
<td>Hordeum vulgare</td>
<td>Orge</td>
</tr>
<tr>
<td>Barley grass</td>
<td>Seed</td>
<td>Flavonoids</td>
<td>HPLC-DAD</td>
<td>Hordeum vulgare</td>
<td>Orge</td>
</tr>
<tr>
<td>Blackberry</td>
<td>Fruit</td>
<td>Anthocyanin (cyanidin-3-glucoside, cyanidin-3-rutinoside, cyanidin-3-arabinoside)</td>
<td>HPLC-DAD</td>
<td>Rubus fruticosus</td>
<td>Framboise</td>
</tr>
<tr>
<td>Blackcurrant</td>
<td>Fruit</td>
<td>Anthocyanins (delphinidin-3-glucoside, delphinidin-3-rutinoside, cyanidin-3-glucoside, cyanidin-3-arabinoside)</td>
<td>HPLC-DAD</td>
<td>Ribes nigrum</td>
<td>Casis</td>
</tr>
<tr>
<td>Blueberry</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Vaccinium myrtillus</td>
<td>Myrtle</td>
</tr>
<tr>
<td>Buckweat sprouts</td>
<td>Seed</td>
<td>Flavonoids</td>
<td>HPLC-DAD</td>
<td>Fagopyrum esculentum</td>
<td>Sarrasin</td>
</tr>
<tr>
<td>Cacao</td>
<td>Seed</td>
<td>Catechin, derivative, catechin, theobromine</td>
<td>HPLC-DAD</td>
<td>Theobroma cacao</td>
<td>Cacao</td>
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</tbody>
</table>
## SUPERFOODS

<table>
<thead>
<tr>
<th>ENGLISH NAME</th>
<th>PLANT PART</th>
<th>CHEMICAL COMPOUNDS</th>
<th>METHOD</th>
<th>SCIENTIFIC NAME</th>
<th>FRENCH NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucuma</td>
<td>Fruit</td>
<td>Polyphenols</td>
<td>UV-Visible spectrophotometre</td>
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<td>Lucuma</td>
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<tr>
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<td>Fruit</td>
<td>Gallic acid</td>
<td>HPLC-DAD</td>
<td>Pouteria lucuma</td>
<td>Lucuma</td>
</tr>
<tr>
<td>Maca</td>
<td>Tubercule</td>
<td>Macamide</td>
<td>HPLC-DAD</td>
<td>Lepidium meyenii</td>
<td>Maca rouge</td>
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<tr>
<td>Maca</td>
<td>Tubercule</td>
<td>Glucosinolate</td>
<td>HPLC-DAD</td>
<td>Lepidium meyenii</td>
<td>Maca rouge</td>
</tr>
<tr>
<td>Mangosteen</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Garcinia mangostana</td>
<td>Mangoustan</td>
</tr>
<tr>
<td>Mangosteen</td>
<td>Fruit</td>
<td>Polyphenols</td>
<td>HPLC-DAD</td>
<td>Garcinia mangostana</td>
<td>Mangoustan</td>
</tr>
<tr>
<td>Maqui berry</td>
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<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Aristotelia chinensis</td>
<td>Baie de maqui</td>
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<td>Moringa</td>
<td>Fruit/Leaf</td>
<td>Iridoids</td>
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<td>Moringa oleifera</td>
<td>Néverdier</td>
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<td>Moringa</td>
<td>Fruit/Leaf</td>
<td>Coumarine</td>
<td>HPLC-DAD</td>
<td>Moringa oleifera</td>
<td>Néverdier</td>
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<tr>
<td>Moringa</td>
<td>Fruit/Leaf</td>
<td>Catechin, epicatechin</td>
<td>HPLC-DAD</td>
<td>Moringa oleifera</td>
<td>Néverdier</td>
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<td>Mulberries</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Morus spp</td>
<td>Müner</td>
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<tr>
<td>Mulberries</td>
<td>Fruit</td>
<td>Polyphenols</td>
<td>HPLC-DAD</td>
<td>Morus spp</td>
<td>Müner</td>
</tr>
<tr>
<td>Pomegranate</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Punica granatum</td>
<td>Granadier</td>
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<tr>
<td>Red banana</td>
<td>Fruit</td>
<td>Polyphenols (Chlorogenic acid, Quercetin, naringenin)</td>
<td>HPLC-DAD</td>
<td>Musa acuminata</td>
<td>Banane rouge</td>
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<tr>
<td>Red banana</td>
<td>Fruit</td>
<td>Anthocyanins (3-o-rutinosylsophoroside, pelargonidin-3-glucoside)</td>
<td>HPLC-DAD</td>
<td>Musa acuminata</td>
<td>Banane rouge</td>
</tr>
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<td>Red beet</td>
<td>Tubercule</td>
<td>Betanin</td>
<td>HPLC-DAD</td>
<td>Beta vulgaris</td>
<td>Beterave rouge</td>
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<tr>
<td>Red berry</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Rubus idaeus</td>
<td>Framboisier</td>
</tr>
<tr>
<td>Red currant</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Rubus idaeus</td>
<td>Framboisier</td>
</tr>
<tr>
<td>Seabuckthorn</td>
<td>Fruit</td>
<td>Carotenoids</td>
<td>HPLC-DAD</td>
<td>Hippophaea rhamnoides</td>
<td>Argousier</td>
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<tr>
<td>Seabuckthorn</td>
<td>Fruit</td>
<td>Flavonoids</td>
<td>HPLC-DAD</td>
<td>Hippophaea rhamnoides</td>
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<tr>
<td>Sour cherry</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Prunus avium</td>
<td>Cerisier</td>
</tr>
<tr>
<td>Strawberry</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Prunus avium</td>
<td>Cerisier</td>
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<tr>
<td>Sweet cherry</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Prunus avium</td>
<td>Cerisier</td>
</tr>
<tr>
<td>Triphala</td>
<td>Fruit</td>
<td>Gallic acid</td>
<td>HPLC-DAD</td>
<td>Emblica officinalis, Terminalia bellica</td>
<td>Amia</td>
</tr>
<tr>
<td>Triphala</td>
<td>Fruit</td>
<td>Quercetin</td>
<td>HPLC-DAD</td>
<td>Emblica officinalis, Terminalia bellica</td>
<td>Amia</td>
</tr>
<tr>
<td>Tusi</td>
<td>Aerial part</td>
<td>Phenols</td>
<td>HPLC-DAD</td>
<td>Ocimum tenuiflorum</td>
<td>Basilic sacré</td>
</tr>
<tr>
<td>Tusi</td>
<td>Aerial part</td>
<td>Ursolic acid</td>
<td>HPLC-DAD</td>
<td>Ocimum tenuiflorum</td>
<td>Basilic sacré</td>
</tr>
<tr>
<td>Yumberry, Bayberries</td>
<td>Fruit</td>
<td>Anthocyanins (cyanidin-3-glucoside)</td>
<td>HPLC-DAD</td>
<td>Myrica rubra</td>
<td>-</td>
</tr>
<tr>
<td>Grape leaf</td>
<td>Fruit</td>
<td>Anthocyanins</td>
<td>HPLC-DAD</td>
<td>Vitis vinifera</td>
<td>Vigne</td>
</tr>
</tbody>
</table>
Control of Glucosinolates

Glucosinolates are secondary metabolites of plants of the Brassicales order, and especially of the Brassicaceae family (cruciferous like cabbage or radish), which have a role as a defence against pests. There are more than 20 known glucosinolates (sinigrin, progoitrin, glucotropaeolin, etc.). Besides their organoleptic effects (bitter taste, spicy or sulphur notes, astringency, etc.), their antioxidant properties give them a potential health benefit. LPPAM proposes analytical methods to determine the purity and/or the composition of the glucosinolates in herbal drug and processed products.

LPPAM offers you the possibility of performing these assays.

<table>
<thead>
<tr>
<th>ENGLISH NAME</th>
<th>PLANT PART</th>
<th>PHOTOCHEMICAL COMPOUND</th>
<th>METHOD</th>
<th>SCIENTIFIC NAME</th>
<th>FRENCH NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maca (Peruvian ginseng)</td>
<td>Tubercule</td>
<td>Glucosinolates (Glucotropaeolin)</td>
<td>HPLC-DAD</td>
<td>Lepidium meyenii</td>
<td>Maca - Ginseng péruvien</td>
</tr>
<tr>
<td>Black radish</td>
<td>Tubercule</td>
<td>Glucosinolates</td>
<td>HPLC-DAD</td>
<td>Raphanus sativus var. niger</td>
<td>Radis noir</td>
</tr>
<tr>
<td>Hedge mustard</td>
<td>Aerial part</td>
<td>Glucosinolates (Sinigrine)</td>
<td>HPLC-DAD</td>
<td>Sisymbrium officinale L. Soop</td>
<td>Vélar</td>
</tr>
<tr>
<td>Mustard seed</td>
<td>Seed</td>
<td>Glucosinolates</td>
<td>HPLC-DAD</td>
<td>Brassica nigra</td>
<td>Moutarde</td>
</tr>
<tr>
<td>Horseradish</td>
<td>Tubercule</td>
<td>Glucosinolate</td>
<td>HPLC-DAD</td>
<td>Armoracia rusticana</td>
<td>Râtait</td>
</tr>
<tr>
<td>Field penny cress</td>
<td>Aerial part</td>
<td>Glucosinolate</td>
<td>HPLC-DAD</td>
<td>Capsella bursa pastoris</td>
<td>Bourse à pasteur</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Seed</td>
<td>Sulforaphan</td>
<td>HPLC-DAD</td>
<td>Brassica oleracea</td>
<td>Choux</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Seed</td>
<td>Sulforaphan</td>
<td>HPLC-DAD</td>
<td>Brassica oleracea</td>
<td>Brocoli</td>
</tr>
</tbody>
</table>
Contamination and adulteration of herbal drugs dominated the headlines of a number of newspaper most recently. Botanical adulterants: a risk management concern for industries.

EAR (Evaluation Adulteration Risk) are accurately characterised botanical reference materials based (RM) on the main flora (Gaston Bonier Flora, Flora Europaeae). The identification is also based on additional analyses such as macroscopic and microscopic analyses.
LPPAM offers a wide range of Reference materials (RM) allowing you to:

- Have reference materials of main adulterations cited in pharmacopoeias
- Have reference materials that will help to identify invasive plants
- Have reference materials that will help to identify essential oils

These Reference materials allow you to:

- Validate the analytical methods
- Verify the applicability of methods (thin layer chromatography, etc.)
- Ensure better assessment of the identification of herbal drugs
- Approve herbal drugs compared in relation to internal reference material
- Perform research and development tests (toxicity, etc.)

The range consists of:

- Herbal medicines (page 28)
- Weeds (page 32)
- Essential oils (page 33)
- Fruits (page 34)
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<tr>
<th>SCIENTIFIC NAME</th>
<th>PLANT PART</th>
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<th>FAMILY</th>
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If you want other certified reference materials, please send us your request by email.

If you want other certified reference materials, please send us your request by email.

If you want other certified reference materials, please send us your request by email.
**INVASIVE PLANTS**

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<td>France</td>
<td>5 g</td>
<td>DV-72</td>
</tr>
<tr>
<td>Polygonatum pensicaria</td>
<td>Herb</td>
<td>Renonule pensiculaire</td>
<td>Polygonaceae</td>
<td></td>
<td>Lady’s thumb</td>
<td>France</td>
<td>5 g</td>
<td>DV-73</td>
</tr>
</tbody>
</table>

If you want other certified reference materials, please send us your request by email.
As a company working with a network of valued partners, you can focus on your key strengths and core business. Collaboration amplifies your strengths. By their knowledge of quality and experience in consulting, the experts of LPPAM can help you with audits, a situational analysis and a customer-made training and consulting.

We help you to provide your customers with flawless products that meet their requirements, while staying within a strict regulatory framework and following a simple and effective ICH Q10 or ISO Quality System.
Herbal drugs are at the core of the LPPAM strategy. Our management acquired over the years specialised expertise in botanics, analytics, the sensory field, the regulatory field and toxicology. As such we can secure, trace and manage your innovative development projects and overcome the technical, regulatory and toxicological challenges of placing herbal medicines on national and international markets.

Evolutionary and multidisciplinary, the expertise of LPPAM can help the industry meet today the requirements of tomorrow in matters of safety, efficacy, quality and sustainability of natural products.

Regulatory Consulting and Audit

Regardless of the product or target market, being able to safely sell and produce, in accordance with the law and the standard professional practices, are constant challenges. Having the expertise and experience of a third party ensures you efficiency and success.

Technical files of toxicological risk evaluation of herbal drug

A comprehensive review of the scientific literature helps to establish the molecular profile of herbal drugs. It shows whether the herbal drug contains:

- Substances covered by national and/or European regulations (prohibited substances in cosmetics, CMR plants, etc.)
- Substances known to have toxic effects on health (Furocoumarines, pyrrolizidine alkaloids, etc.)
- Contaminants with allergenic, sensitising or photosensitising properties (naphthoquinone, etc.)

In specific cases, an analytical approach for the raw material complements this analysis, depending on the risk. Based on the results of these studies, LPPAM performs a “Toxicological Risk Evaluation”.
INTERPRETATION OF ANALYTICAL RESULTS

Advice from specialists: interpretation of analytical results

The results of the analyses often result in staggering amounts of data, which are sometimes difficult to interpret. LPPAM assists its clients with the interpretation of analytical results and anticipates the corrective actions to be implemented. We provide you with our conclusions and our best recommendations to explain the analytical results on a separate analysis report.

Our support and analysis services concern finished goods, intermediate goods as well as raw materials.
Technical file

LPPAM implements technical files that ensure the quality and safety of the plant-based dietary supplement in accordance with the regulation.

Technical file for evaluation of substances to be monitored

LPPAM creates technical dossiers for evaluation of substances to be monitored in accordance with the decree of 24 June 2014 relating to plants. The record is compliant according to the Annexes of the decree. This evaluation will allow you to estimate the safety of the nutraceutical product for the consumer.

PLAN OF A RISK ANALYSIS RECORD CONCERNING A SUBSTANCE TO BE MONITORED

1 - IDENTIFICATION OF THE MOLECULE TO BE DETERMINED
• Name, Formula, CAS No., physicochemical characteristics, solubility.

2 - LIST OF PLANTS CONTAINING THE SUBSTANCE
• Scientific name, family, vernacular name,
• Part used,
• Qualitative and quantitative composition, including substance to be monitored,
• Conventional preparations of the plants, dosage, duration of treatment,
• Determining the amount of substance administered per day in the conventional preparations.

3 - DATA ON THE ACTION MECHANISM
• Physiological,
• Biochemical,
• Nutritional.

4 - TOXICOLOGICAL DATA
• Acute toxicity (single-dose, repeated doses),
• Chronic toxicity,
• Genotoxicity, toxicity for reproduction, carcinogenicity, mutagenicity
• Toxicity for specific target organs,
• Toxicity in humans

5 - TOXICITY REFERENCE VALUES (TRV)
• Theoretical Maximum Daily Intake: TMDI
• Acceptable Daily Intake: ADI
• Tolerable Daily Intake: TDI
• No Observed Effect Level: NOEL
• No Observed Adverse Effect Level: NOAEL
• Low Observed Effect Level: LOEL

6 - COMPARATIVE STUDY OF DOSES ADMINISTERED WHEN TAKING CONVENTIONAL PREPARATIONS CONTAINING THE SUBSTANCE TO BE MONITORED, AND THE NUTRACEUTICAL PREPARATION.

7 - RISK ASSESSMENT: OVERALL RISK OR = SYSTEMIC RISK L X SUBSTANCE RISK X USE RISK
• Systemic risk: Carry out a comprehensive assessment of the process for management of the substance in the preparation:
• Botanical identification of the RM plant,
• Origin of the plant, harvest period,
• Phytosanitary treatments,
• Qualitative and quantitative composition of the plant,
• Manufacturing process with careful choice of the solvent. The goal being to perfectly manage the quality of the chosen preparation and the amount of substance to be monitored.
• Substance Risk = Inherent toxicity risk of the substance (Classification by family of substances and data from the bibliography),
• Use risk: Risk related to the criticality of use.
• Systematic or non-systematic assay of the substance,
• Routes of use,
• Method of use, duration of exposure (dose),
• Evaluation of the exposure by dietary intakes and nutraceutical supplementary intake.

8 - RECOMMENDATIONS OF MAXIMUM DOSES TO BE COMPLIED WITH (RISK ANALYSIS).

Technical file for "Substance to be monitored" Solutions adapted to your requirements.

Do not hesitate to contact us for any technical record.
LPPAM Consulting in the field of phytotherapy is:
- An immediate contribution of specialised competence and expertise
- Capitalisation of knowledge and experiences of our employees
- The technical and regulatory monitoring of enforceable texts with a prospective vision

LPPAM offers you the following expertise:

- **ICH Q9 Consulting and Audit (Risk management)**
  To make identification of hazards and management of associated risks one of the principles of your quality system. To improve your development time and the management of your production processes through better knowledge of the variability sources. To identify the hazards associated with your products and processes, and quantify their risks are both strong expectations of your clients and authorities. To implement the right rules, the ones that allow you to control the hazards and risks identified by your HACCP or FMECA analysis, are one of the objectives of your quality standards whether it is GMP or ISO.

- **Audit and consulting on GMPs (Part I: Good Manufacturing Practices)**
  Meeting your regulatory obligations, ensuring high quality of herbal medicines and patient safety, efficiently managing your processes and activities.

- **Regulatory Consulting and Audit**
  Regardless of the product or target market, being able to safely sell and produce, in accordance with the law and the standard professional practices, are strong and constant challenges. For that, having the expertise and experience of a third party ensures efficiency and success.

Do not hesitate to contact us for more information

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**YOUR REGULATORY QUALITY PARTNER**

We propose assessments and audits of your quality system tailored to your requirements by carrying out risk analyses according to ICH Q9. We will assist you in this process or audit the procedures that you implement, and we will provide you with our conclusions and best recommendations.

The audits conducted by LPPAM will demonstrate that you meet the expectations of customers and consumers and that you intend to ensure the quality and safety of your products. The need for GMP audits and an overall consistent approach was never felt as much. The global markets and the international manufacture as well as the supply of raw materials and active pharmaceutical ingredients increase the complexity of supply chains.

**Our services**

- Risk analysis according to ICH Q9
- GMP audit
- HACCP Audit
Training is all about opening up to others...

The success and development of your company goes through continuous training of your people. Changes in technology and the economic environment make it essential to demonstrate responsiveness, anticipation and adaptation. Training is a major focus for ameliorating the performance of your company. It is in this spirit, that in 2015, our training centre has been set up to offer you a complete range of training. Today more than ever, our adage “Investing in training is to bring together people and results together for the future” has turned out to be true. I invite you to find out more about our training offer through this catalogue. We listen to your needs and appreciate your input so we can design trainings adapted to and as part of all your projects. Custom-made programmes can be defined jointly with content is adaptable to your requirements.

TRAINING 1: RISK ANALYSIS FOR HERBAL DRUGS

TRAINING 2: APPLICATION OF MICROSCOPIC (2.8.23, Ph. Eur.) AND MACROSCOPIC OBSERVATIONS: TECHNICAL APPROACH

TRAINING 3: APPLICATION OF DETERMINATION OF FOREIGN ELEMENTS: TECHNICAL, REGULATORY AND HEALTH APPROACH
TRAINING 1  
RISK ANALYSIS FOR HERBAL DRUGS

Objectives:
- To acquire the basic knowledge of risk analysis for the use of herbal drugs in accordance with ICH Q9 (adulteration, falsification, contamination)
- To know how to implement a risk analysis
- To know how to implement corrective actions.
- To acquire the basic knowledge of risk analysis of the consumption of herbal drugs (toxicology, interaction, etc.)

You will learn how to implement a risk analysis procedure.
You will be able to go beyond the primary risk analysis to implement an actual quality management procedure.

Training intended for:
Laboratory technicians, Quality Manager, Research and Development Manager, Pharmacist.
Proficiency level: Bac + 2

Pedagogical, technical and supervisory resources
- Power Point video projection
- A mix of presentations, discussions with the trainer and between participants
- Case studies and sub-group activities to be directly applied by the participants upon return to their workstation
- Provision of educational documentation

PROGRAM

I - INTRODUCTION
Introduction to the risk analysis and management

II - TERMINOLOGY
Main terminologies
Essential definitions

III - REGULATORY ASPECTS
ANSM’s position on the implementation of the ICH Q9
Normative requirements (GMP, FDA, etc.)

IV - PRACTICAL APPLICATIONS
Theory of risk analyses
Implementation of risk analysis.
Explanation of the documents given to participants: training support.
Understanding the ICH Q9 guide
Discovering the main principles of risk analysis tools, objectives, methodology
Being able to better understand the implementation of a risk analysis on a process.
Finally, demonstrating the value of this approach as a support for decision-making

V - RISK ANALYSIS ON THE CONSUMPTION OF HERBAL MEDICINES
Fish bone diagram (Main sources of study)
Consumer attitude
Market access
Toxicological risks (Substances to be monitored)
Information on labelling
Manufacturing
Regulatory risk(s)
Uncertainty(ies)

VI - RISK ANALYSIS ON THE USE OF HERBAL DRUGS
Ensure the quality of herbal drugs and herbal products
Risks presented by herbal products
Botanical identification (varietal purity)
Adulteration
Falsification
Contaminants
Example of adulteration
Risk analysis: Ginseng
Hazard identification: Ginseng
Regulatory bodies involved in the quality of natural products

VII - CONCLUSION

VIII - STUDY OF A SPECIFIC CASE

IX - BIBLIOGRAPHY
TRAINING 2

APPLICATION OF
MICROSCOPIC (2.8.23, Ph. Eur.)
AND MACROSCOPIC
OBSERVATIONS: TECHNICAL
APPROACH.

Objectives:
- To acquire the basic knowledge for macroscopic and microscopic identifications of herbal drugs
- To know how to implement the research protocol for macroscopic and microscopic tests
- To know the risks of determination of tests (macroscopic and microscopic) through a risk analysis

Training intended for:
Laboratory technicians, Quality Managers, Research and Development Managers, Pharmacists
Proficiency level: Bac + 2

Pedagogical, technical and supervisory resources
- Power Point video projection
- A mix of presentations, discussions with the trainer and between participants
- Case studies and sub-group activities to be directly applied by the participants upon return to their workstation
- Provision of educational documentation

PROGRAM

I - INTRODUCTION
II - ORGANOLEPTIC CHARACTERISTICS
III - BOTANICAL IDENTIFICATION PROCESS
IV - GENERAL GUIDE FOR MICROSCOPIC IDENTIFICATION
V - MICROSCOPIC EXAMINATION OF A VEGETABLE POWDER
VI - AUTHENTICATED SPECIMEN
VII - MORPHOLOGY OF PLANTS (ROOTS, STEMS, LEAVES, ETC.)
VIII - TRAINING AND AUTHORISATION
IX - CONCEPT OF BOTANICAL EXPERTISE
X - MELISSA (MACROSCOPY/MICROSCOPY)
XI - PEPPERMINT (MACROSCOPY/MICROSCOPY)
XII - IVY (MACROSCOPY/MICROSCOPY)
XIII - HAWTHORN (LEAF) (MACROSCOPY/MICROSCOPY)
XIV - COMMON VALERIAN (MACROSCOPY/MICROSCOPY)
XV - VALERIANA WALICHII (MACROSCOPY/MICROSCOPY)
XVI - CASCARA (MACROSCOPY/MICROSCOPY)
XVII - BUCKTHORN (MACROSCOPY/MICROSCOPY)
XVIII - HORSETAIL (MACROSCOPY/MICROSCOPY)
XIX - HAWTHORN (FRUIT) (MACROSCOPY/MICROSCOPY)
XX - CONCLUSION
TRAINING 3  DETERMINATION OF FOREIGN MATTERS: TECHNICAL, REGULATORY AND HEALTH APPROACH

PROGRAM

I - INTRODUCTION
II - DEFINITION OF FOREIGN ELEMENTS
III - RULES/ASSUMPTIONS
IV - CONCEPT OF HETEROGENEITY IN HERBAL MEDICINES
V - QUANTITY OF SAMPLE FOR THE DETERMINATION OF FOREIGN ELEMENTS
VI - RISK OF ERRORS
VII - SAMPLING
VIII - DIAGRAM FOR DETERMINING THE FOREIGN ELEMENTS
IX - RISKS ASSOCIATED WITH FOREIGN ELEMENTS
X - METHODOLOGY
XI - SAMPLING PLAN
XII - SPECIFICATIONS
XIII - TRAINING AND AUTHORISATION OF OPERATORS
XIV - PRACTICAL APPLICATIONS (DOCUMENTARY ANALYSES)
XV - BIBLIOGRAPHY
XVI - WEBSITE
XVII - CONCLUSION

Objectives:
- To acquire the basic knowledge for the determination of foreign matters in compliance with the pharmacopoeias
- To know how to implement the test Foreign matter
- To know the risks of determination of tests (Foreign matter) through a risk analysis

Training intended for
Laboratory Technicians, Quality Managers, Regulatory Managers, Research and Development Managers, Pharmacists.
Proficiency level: Bac + 2

Pedagogical, technical and supervisory resources
- Power Point video projection
- A mix of presentations, discussions with the trainer and between participants
- Case studies and sub-group activities to be directly applied by the participants upon return to their workstation
- Provision of educational documentation

Objectives:
- To acquire the basic knowledge for the determination of foreign matters in compliance with the pharmacopoeias
- To know how to implement the test Foreign matter
- To know the risks of determination of tests (Foreign matter) through a risk analysis

Training intended for
Laboratory Technicians, Quality Managers, Regulatory Managers, Research and Development Managers, Pharmacists.
Proficiency level: Bac + 2

Pedagogical, technical and supervisory resources
- Power Point video projection
- A mix of presentations, discussions with the trainer and between participants
- Case studies and sub-group activities to be directly applied by the participants upon return to their workstation
- Provision of educational documentation
"Systematic innovation requires the will to see change as opportunity"

Peter Drucker

Your preferred partner to boost your innovation by sharing knowledge and expertise in order to improve performance. Together, let us invent tomorrow’s herbal medicine.

LPPAM personally accompanies you at every step of your innovation project. A single leitmotiv: confidentiality and security of information.
Stability testing
LPPAM carries out stability studies either as part of a quality monitoring process or as part of a research and development project. LPPAM guides you through the development, validation and implementation of the stability protocol in accordance with international standards (ICH guideline).

Analytical Method Development and Validation
The LPPAM laboratories offer you their services and expertise and provide you with their wide range of analytical equipment for the implementation, development, optimisation and validation of analytical methods. LPPAM also develops and validates methods for internal use. These methods are state-of-the-art and of world class quality.

Our analytical development services include:
• Analytical feasibility study
• Analytical validation according to international standards
• Method transfer
• Validated non-proprietary assays (According to the ICH standards)
• Validated proprietary assays (According to the ICH standards)

Formulation
LPPAM assists manufacturers in the innovation of nutraceutical products and phytomedicines made from herbal drugs. These activities include:
• Selection of active substances: screening, bibliographic data
• Research of innovative products and concepts
• Technical feasibility study, product development
• Qualitative improvement of your products
• Deformulation and reconstitution of formulas

The supply chain is an important link in the value chain of nutraceuticals. LPPAM offers you its experience in the following areas:
• Sourcing,
• Selection of raw materials,
• Definition of specifications.
The sensory analysis consists of analysing the organoleptic properties of the products using the sensory organs, i.e. sight, hearing, taste, smell and touch. The analysis occupies an important place among the analysis methods characterising the organoleptic properties of a product. Its importance is ever-increasing in the selection of products.

Our tools and methods help evaluate the sensory and affective characteristics and better understand consumer behaviour for the purpose of improving the performance of your products.

Our solutions:
- Literature review on the perceptual characteristics of the products (list of aromatic descriptors, influence of the concentration or mixture on the perception, etc.)
- Sensorial diagnosis of products
- Perceptual properties of products

**SENSE:**
- Definition of varietal specificities
- Benchmarking against the competition,
- A study on the outside influences on the product quality;

**QUALITY:**
- Choice and selection of the ingredients
- Comparing products and characterising the differences;

**RESEARCH AND DEVELOPMENT:**
- Study of the preferences and acceptability of consumers,
- Sensory position compared;

**PRODUCTION:**
- Detection of a deviation,
- Sensory specifications;

**MARKETING:**
- Choice and selection of the ingredients
- Comparing products and characterising the differences;

**NEW**
THE RESEARCH SERVICES PARTNERS

Phytochemical Research
- Herbal Food Supplements (HFS)
- Herbal Medicinal Products (HMP)
- Botanicals
- Nutraceuticals
- Natural Ingredients

Expertise in Dietary supplements and nutraceuticals research
- Our Vision: Global experts in natural product.
- Our Purpose: Together, we realise your innovation project in tangible business.

- Personal care
- Nutrition & Health
- Nutraceuticals
- Food & Beverage
- Naturals ingredients

From the pollination of knowledge to the fructification of your innovation projects.

Our research and development department Phytodeal conseils® assist you in the creation and implementation of your projects.

- Pollinisation
  LPPAM collecting and analyzing needs of professionals.

- Fructification
  LPPAM accompany your projects from concept to completion.

For a company focused on providing innovative, high-value solutions, research and development is key to our success. Our rich heritage of R&D in nutraceuticals is part of what makes LPPAM unique. It enables us to extend the talents of our people in order to meet the current and future needs of our clients.

Our mission in innovation projects:
- Facilitate partnerships and collaborative research that generates added value for your innovation projects
- To support you with setting up, structuring and following up your innovation projects,
- Put you in touch with scientific, technical or industrial partners.
- Identify financial mechanisms to support innovation.
- Advising you on unmet needs and emerging trends in the market bringing great ideas for innovation.
PRACTICAL INFORMATIONS

Sending samples

1 - MINIMUM AMOUNT OF THE SAMPLE THAT THE CLIENT MUST PROVIDE FOR ANALYSIS

Quantities required:

Minimum quantities must be provided to us so that we can perform all the analyses in the appropriate conditions. In case these quantities are not provided, LPPAM may not be able to issue a report under the COFRAC accreditation.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount*</th>
<th>Unit</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbal drug</td>
<td>300 g</td>
<td>N.A</td>
<td></td>
</tr>
<tr>
<td>Fluid extract</td>
<td>50 ml</td>
<td>N.A</td>
<td></td>
</tr>
<tr>
<td>Dry extract</td>
<td>25 g</td>
<td>N.A</td>
<td></td>
</tr>
<tr>
<td>Syrup</td>
<td>100 ml</td>
<td>or 1 packaging unit</td>
<td>or 1 packaging unit</td>
</tr>
<tr>
<td>Tablet</td>
<td>50 g</td>
<td>or 1 packaging unit</td>
<td>or 1 packaging unit</td>
</tr>
<tr>
<td>Infusion</td>
<td>50 g</td>
<td>or 1 packaging unit</td>
<td>or 1 packaging unit</td>
</tr>
<tr>
<td>Capsule</td>
<td>50 g</td>
<td>or 1 packaging unit</td>
<td>or 1 packaging unit</td>
</tr>
</tbody>
</table>

* These quantities relate to requests for complete analyses (for example: Current European Pharmacopoeia) including the assay of the active ingredient. In the case of requests for simplified analyses (for example: Identification according to the current European Pharmacopoeia), this quantity may be revised downwards; please do not hesitate to contact us.

2 - TURNAROUND TIME FOR RESULTS

<table>
<thead>
<tr>
<th>Priority</th>
<th>Time limit for receipt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent analysis **</td>
<td>3 working days **</td>
</tr>
<tr>
<td>Routine analysis</td>
<td>12 working days</td>
</tr>
<tr>
<td>Analysis of contaminants</td>
<td>15-20 working days</td>
</tr>
<tr>
<td>(pesticides, heavy metals, radioactivity, mycotoxins)</td>
<td></td>
</tr>
<tr>
<td>Microbiological control</td>
<td>5-7 working days</td>
</tr>
<tr>
<td>Project</td>
<td>Stipulated in the contract</td>
</tr>
</tbody>
</table>

** For urgent analyses, contact us and mention it in the request.

Transmission of samples

When sending a large number of samples, please inform us upfront to get the best turnaround times.

Packaging

Please note that the bottles can contaminate the samples. In case of any doubts, do not hesitate to contact us.

Logistics of the sample

To send us your samples, there are several options:

- post
- carrier
- submission by you to the laboratory from Monday through Friday from 8:30 am to 5:30 pm.

NB: When you send us a sample to be kept under special conditions (temperature, controlled humidity, etc.), you must use the services of a carrier that offers this service.

Dispatching samples

Any shipped sample must be identified (at least with a batch number) and accompanied by a purchase order for effective management of the request.
LPPAM

GENERAL TERMS AND CONDITIONS OF SALE

Our sales are subject to the present general terms and conditions which prevail over any terms and conditions of purchase, unless otherwise expressly agreed by us.

1 - ENFORCEMENT AND APPLICATION OF THE GENERAL TERMS AND CONDITIONS OF SALE

These terms and conditions of sale are systematically sent to each buyer so they may place an order. As a result, placing an order means that the buyer fully and unconditionally accepts these terms and conditions of sale to the exclusion of any other documents such as leaflets or catalogues issued by the customer and which are only given for information. Therefore, unless expressly accepted, any condition to the contrary laid down by the buyer shall not be enforceable against the seller, regardless of the moment at which it was brought to its knowledge. Failure by the seller not to avail itself of any time or of any of these terms and conditions of sale shall not be construed as a waiver of any such conditions.

2 - ESTIMATE

Issuing an estimate shall not put us under an obligation to perform the works corresponding to the estimate before receiving the order form. Any estimate issued other than the final documents shall be deemed to be approximate.

3 - ORDER FORM / ACCOMPANYING SLIP

All works entrusted to us and estimated must give rise to an order form signed by the customer for acceptance and marked invalid for acceptances. The estimate shall define the exact nature of the works requested and desired lead-times. Performance of the services shall imply that the customer accepts these general terms and the specific terms and conditions stipulated in the estimate.

4 - DELIVERY

The lead-times stipulated in the order are only given for your information. Any late performance shall not entitle the buyer to cancel the order, to refuse the results of tests and analyses conducted, or to claim any damages.

5 - PRICE

Our prices cover common services performed in normal conditions. All orders are invoiced at the price in force on the date of order or under the specific terms and conditions set forth in writing in the contract of sale. Prices of analyses required urgently, outside the lead-times set by LPPAM, shall be increased. Our prices are exclusive of tax and in French.

6 - PRICE CONDITIONS AND PAYMENT

The services are provided at the price in force at the time the order is placed. All payments have to be made at the LPPAM head office. The order must be paid no later than within 30 days of the date of invoice. No discount shall be granted in the event of advance payment. Any additional service made on request of the customer on a sample already analysed by the LPPAM shall use them at his/her own risk.

7 - SAMPLE

Samples are transported at the customer’s risk. LPPAM may refuse samples to be analysed that do not fall within the scope of the laboratory’s activities. In the absence of any instructions from the customer, LPPAM shall apply the method of analysis it considers to be the most appropriate with due regard to its means of investigation and shall not be held liable for failure to comply with a specific method.

8 - PENALTIES

By express agreement and pursuant to Article 33 § 2 and 3 of the amended order dated 1st December 1986, any amount not paid by the buyer after the date of payment stipulated on the invoice shall automatically carry interest for late payment until paid in full, at a rate equal to one and a half times the legal interest rate.

9 - DEFAULT IN PAYMENT

In the event of non-payment of any payments agreed, all other payments due shall become immediately payable, even if they have given rise to bills of exchange. LPPAM reserves the right to suspend or cancel the orders that are not yet delivered. Such a right shall also be effective in the event that the buyer is unable to furnish sufficient guarantees of solvency during the contract. Finally, in the event that, to obtain collection of amounts outstanding, our company is forced to take pre-contingent action or to initiate legal proceedings, the debtor shall be required to pay, by way of fixed compensation, a sum equal to 15% of the amount including tax of sales invoiced but still outstanding.

10 - RESERVATION OF TITLE

In accordance with the Act dated 12th May 1982, LPPAM reserves title to the results of various analyses and tests until full payment of the price.

11 - CLAIMS

Claims relating to the stipulations contained in our invoices may only be taken into account if they are made in writing within 8 days of the date said invoices were issued. Any claim relating to the supply of the results of analyses and tests must be made in writing by registered letter with acknowledgment of receipt within one (1) month of the certificate being issued.

12 - CONFIDENTIALITY

LPPAM agrees not to disclose to third parties, without prior agreement, any information relating to the works entrusted to it. LPPAM staff is sworn to professional secrecy.

13 - WARRANTIES AND LIABILITY

The analyses are performed in as best conditions as LPPAM’s technologies so permit. The interpretations and conclusions are prepared with a reasonable standard of research, care and verification but the customer acknowledges that, in any case, such conclusions and interpretations are only the scientific opinion of the signatory. LPPAM shall not, under no circumstances warrant that such conclusions, interpretations and opinions shall always be correct, absolute or recognized as such, in particular due to the consistent developments in science and changing regulations. In any event, the customer must satisfy himself of the validity of such conclusions and interpretations if he/she wishes to rely thereon for subjects of the utmost importance and in any event he/she shall use them at his/her own risk. The customer must ensure that all samples sent to us are in a stable condition and safe. The customer shall be liable for any damage, injuries or diseases that may be caused to our company or its staff due to one of his/her samples, even in the case that the customer stressed the risk of a sample-related danger. In any event, LPPAM’s liability shall be limited to the price paid by the customer for the analysis of the sample in question.

14 - USE OF THE RESULTS

Only the original documents and certified copies shall be deemed authentic in relation to third parties. No change or alteration may be made to this document after delivery. Any document issued by LPPAM may only be reproduced in full and marked «supersedes». Any other reference to LPPAM’s services must first be agreed in writing by us. Any use of the results communicated by LPPAM, or any improper reference to its works, may give rise to action in accordance with regulatory provisions in force.

15 - JURISDICTION

It is expressly agreed that the reports arising out of or in connection with any sale shall be governed by the laws of France, and that the Civil and Commercial Courts of VALENCE, and possibly French High Courts of Justice, shall have exclusive jurisdiction in the event of a dispute. No dispensation from the present provision shall be granted. The parties shall seek to reach a mutual agreement.