company profile

FOLLOW THE PLANTS

100+ YEARS OF BOTANICAL EXCELLENCE
FOR THE PHARMACEUTICAL
AND NUTRACEUTICAL INDUSTRY

indena®

SCIENCE IS OUR NATURE. SINCE 1921

OUR MISSION

At Indena, we believe that an **in-depth knowledge of active ingredients derived from medicinal plants** and a **constant commitment to excellence** are crucial to serving our clients in the pharmaceutical and nutraceutical fields.

Research and production technologies are the main focus of our mission, allowing us to truly create **added value for our partners**.

And we've got **more than a century of experience** to prove it works.

HISTORY HIGHLIGHTS

1921

Carlo Boccaccio Inverni begins his **pioneering journey in the field of botanical extracts** in Milan. **Biagio Alberto Della Beffa** joins him as partner and managing director.

1940s

The **Della Beffa family** acquires the **majority stake** in the company.

1950s

Luigi Della Beffa, Biagio Alberto's son, **enters the company**. **Inverni Della Beffa is created, a new pharmaceutical division** dedicated to manufacturing and selling finished dosage forms from botanical derivatives.

1960s

Luigi Della Beffa brings his vision to life: **business relations at international level and a new plant in Settala** – a model of innovation, with **cutting-edge facilities and laboratories**.

1970s

Inverni Della Beffa develops **Indena**, **Industria Derivati Naturali**. **Pharmaceuticals** and **nutraceuticals** are its reference markets, all over the world.

1980s

Nutraceuticals become more and more important and **scientifically recognized**. Indena captures market shares with **multicomponent plant extracts**.

1990s

Research is increasingly a **strategic pillar** for Indena's leadership. **New international plants and commercial branches** open in Europe and the US for the promotion and distribution of Indena products. Luigi's sons **Benedetto and Biagio Della Beffa join** the company.

2000s

Indena Phytosome™ is developed: a **revolutionary delivery system** to **optimize** the **absorption** and **effectiveness** of **botanical extracts**. Indena's **international growth** continues, especially in Asia with the establishment of **Indena Japan** and **Indena Biotechnology (Shanghai)**, and the **upgrade of the Indian industrial site**.

2010s

Cutting-edge technological **innovations** are introduced in the **Settala plant**, for sophisticated **CDMO** (Contract Development and Manufacturing Organization) activities. **Indena Brasil** is established for commercial promotion in Latin America.

2021... onwards

The **centennial** marks a new beginning. Indena consolidates its position as a **world leader in the field of botanical extracts**. Innovation and implementation of the most advanced **technologies, research** on new products, **bespoke applications**, **CDMO investments**, **quality**, and **sustainability**: this is **Indena's vision for the next 100 years**.

FACTS & FIGURES

900+ EMPLOYEES

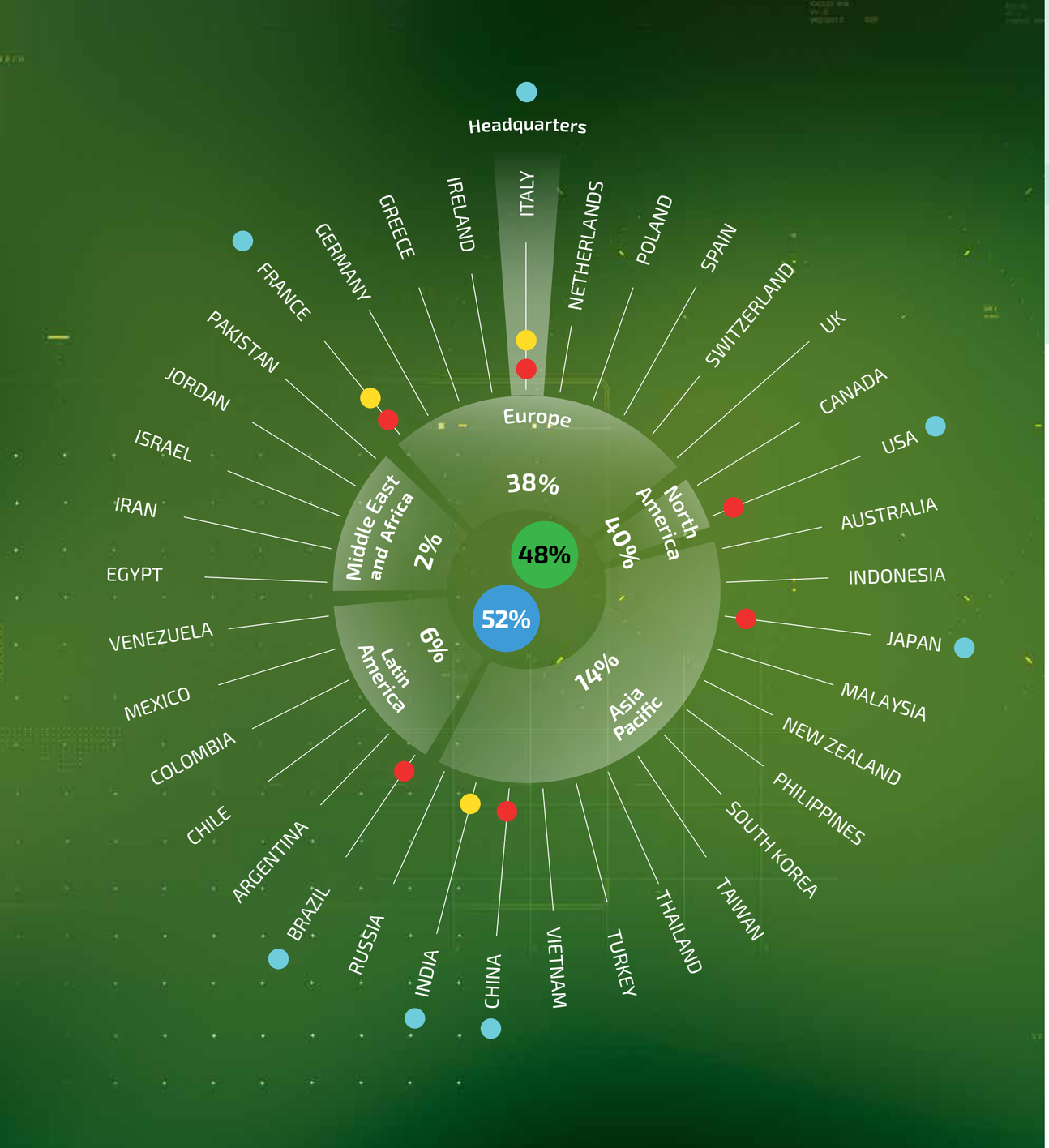
5 INTERNATIONAL BRANCHES

4 PRODUCTION SITES

80+ COUNTRIES SERVED

100+ PRIMARY PATENTS

1000+ SCIENTIFIC STUDIES



INDENA'S MARKET

BUSINESS SECTORS

- Pharmaceutical
- Nutraceutical

ORGANIZATION

- Direct presence
- Sales branch
- Production site

INDENA'S 4 PILLARS
THE FOUNDATION FOR MORE THAN A CENTURY OF HISTORY

SCALE-UP & INDUSTRIAL PRODUCTION

- Extraction
- Organic synthesis
- High containment
- Isolation

RESEARCH

- Process development
- Clinical testing
- Formulation development
- Health ingredient development
- Stability
- Safety and toxicity studies

QUALITY, SAFETY & EFFICACY

- ICH
- OECD
- ANSM
- AIFA
- cGMP
- FDA
- HACCP

BOTANICAL EXPERTISE

- GACP
- Plantations
- Nagoya Convention
- Sustainability

CONSTANT ATTENTION TO SUSTAINABILITY AND ENVIRONMENTAL IMPACT

A RESEARCH-BASED COMPANY

At Indena, we have always been inspired by a rigorous scientific approach in our research. The company employs **over 80 researchers** and invests a significant amount of its annual turnover in research, recognizing this activity as the key to its success. As a matter of fact, no less than **4.3% of revenue is dedicated to R&D**.

In **process research**, we design and engineer original advanced industrial production processes to work on **new or existing molecules**, as well as to develop **new APIs and HPAPIs**.

In **product research**, we focus on active ingredients for the health and nutrition market, supporting them with **safety** and **efficacy data** and applying **innovative delivery technologies** as needed.

BOTANICAL SOURCES

In addition to supporting **traditional gathering of wild plants**, Indena has established a **worldwide network of plantations** that yield high-quality vegetal raw materials.

Internationally recognized botanical experts monitor **more than 21,000 hectares** of plantations in compliance with **Good Agricultural and Collection Practices** (GACP), which today account for over 60% of the vegetal raw material we use.

We uphold the **highest botanical standards**, with maximum **respect for the environment and its biodiversity**.

To achieve well-identified and consistently high-quality vegetal raw materials, we use **micropropagation and traditional plant breeding**, never GMOs.

INDENA'S PRODUCTION

Advanced, **highly flexible and environmentally friendly** state-of-the-art technology is used throughout the **manufacturing cycle** at Indena.

Our facilities feature rigorously separate authorized areas: **separate** and **confined equipment for pharmaceutical products,** and **dedicated equipment for nutraceutical** ones.

With **more than 100 DMFs**, Indena's **pharmaceutical products meet US-FDA and EU requirements**, and two of our production sites are accredited by Japanese authorities.

Our **spray drying** capabilities include **aqueous solution** for **food supplements**, from **organic solvents** on different scales, developed over decades of operations, for pharmaceutical products.

We offer **fermentation production** capabilities for pharmaceutical products.

For the nutraceutical market, we provide traditional **botanical extracts** for **health food**, premium ingredients with proprietary technologies, and pre-mixed preparations.

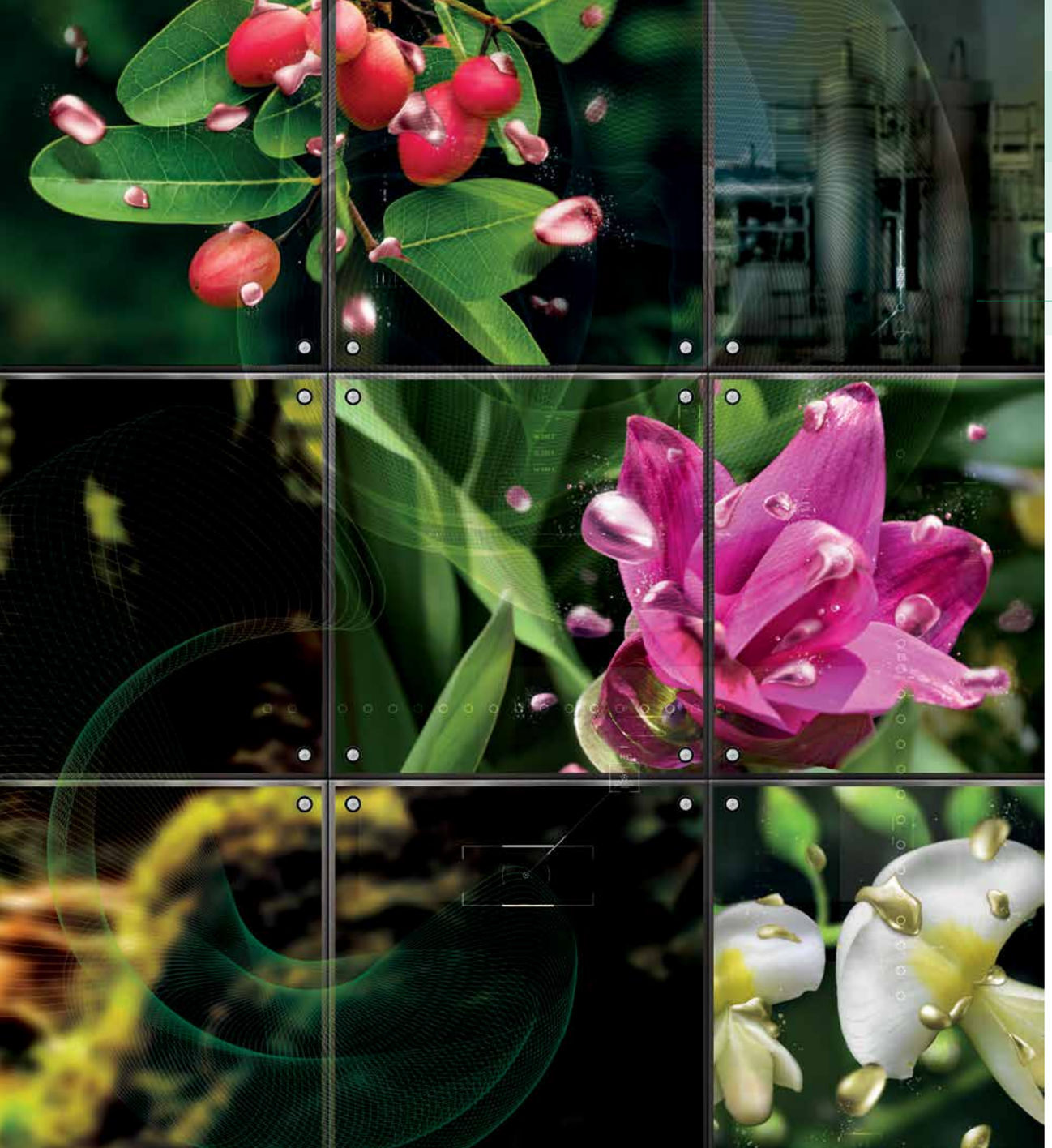
MAIN PRODUCTION EQUIPMENT AT OUR SITES

MANUFACTURING TECHNOLOGIES FOR HERBAL-ORIGIN PRODUCTS (PHARMACEUTICAL AND NUTRACEUTICAL)

- **Grinding apparatus (hammer- and knife-grinders)** | plant material grinding
- **Percolators (static and dynamic)** | plant material extraction
- **Dynamic and continuous extractors**
- **Concentrators (thin-film, tube-sheaf, plates concentrators)** | solvent evaporation
- **Liquid-liquid extractors** | selective extraction, purification process
- **Stirred and microwave driers** | drying
- **Spray dryers** | spray drying (aqueous solution)

MANUFACTURING TECHNOLOGIES FOR PHARMACEUTICAL PRODUCTS (SYNTHESIS AND SEMI-SYNTHESIS)

- **Reactors** | reaction, crystallization, concentration
- **Columns for chromatography, including preparative HPLC** | concentration, purification, isolation
- **Centrifuges, filter-dryers** | solid-liquid separation
- **Driers (tray driers, stirred driers, microwave)** | drying
- **Spray dryers** | spray drying
- **Mills, wet mill, and sieves** | powder milling and sieving
- **Mixers** | powder blending, standardization



MAIN PRODUCTION EQUIPMENT AT OUR SITES

MANUFACTURING TECHNOLOGIES FOR NUTRACEUTICAL PRODUCTS AND BIOAVAILABILITY OPTIMIZATION

Indena combines **over 100 years of phytochemical expertise and botanical experience** with **state-of-the-art technological equipment and constant efforts towards quality**. This allows us to produce formulations at scale while still guaranteeing the natural component's matrix can be replicated, controlled, and verified batch after batch.

As early as the **mid-1980s**, Indena started the conversation on botanicals' bioavailability by pioneering the **development of Indena Phytosome™**, a **proprietary technology** to **optimize** the **absorption** of **phytonutrients**.

Over the years, the company has pursued the **continuous evolution** and refinement of its original approach, creating a **multi-talented technology platform** that goes **beyond bioavailability**.

ABOUT INDENA PHYTOSOME™

Indena Phytosome™ is a **solid dispersion of botanicals or natural compounds into a 100% food-grade matrix based on lecithin**, amphipathic molecules which act as inhibitors to self-aggregation and are effective wetting agents.

This innovative delivery system enhances the power of phytonutrients, by improving the effectiveness and target reach of a wide range of natural compounds.
This helps to:

- Optimize the bio-absorption of many phytonutrients
- Reach target organs
- Protect the extract from oxidation and help stability
- Minimize variations between subjects
- Improve formulation (flexibility, taste masking)
- Optimize interaction with the microbiome
- Improve botanical extracts' tolerability

PROCESS DESIGN FOR HIGH-CONTAINMENT SYNTHESIS

PROCESS DEVELOPMENT & SCALING-UP CAPABILITIES

- Process design for high-potency compound synthesis
- Route optimization (statistical design of experiment) and scale-up
- Preparation of small-scale material, from grams to kilograms
- cGMP manufacturing of APIs for clinical trials

ANALYTICAL & PRE-CLINICAL SUPPORT

- Identification of related substances and secondary metabolites
- Support to process development
- IPC and release analysis for GMP production
- Solid-state characterization and polymorphism screening for IP protection
- Investigational and regulatory stability studies
- Collaboration with leading international analytical organizations (EP and USP, AOAC) to promote innovation in analytical methods

PRODUCTION-SCALE CAPABILITIES

- Semi- and total-synthesis of HPAPIs
- Availability of industrial suites (equipped with 20-linear-meter glove boxes)
- Availability of 3 kilolabs for clinical and small-scale commercial supplies of HPAPIs with OEL as low as 1 ng/m^3
- Lab-, pilot- and industrial-scale multipurpose fermentation plants
- Intermediate- and large-scale spray dryers, both working with class T2 organic solvents, also in the presence of excipients/co-polymers for amorphous solid dispersion preparation (for drug product intermediates)

QUALITY

1 QUALITY OF THE RAW MATERIALS

We identify plants through specific protocols and analyses, such as:

- Botanical microscopical and macroscopical tests
- Taxonomy classification by chromatographic fingerprinting
- Genomic DNA analysis

2 CONTROL OF THE SUPPLY CHAIN

- Suppliers accredited on the basis of quality, sustainability and traceability criteria
- Entire supply chain constantly monitored, from cultivation to delivery at production sites
- Quality of supply chain in compliance with Good Agricultural and Collection Practices (GACPs) guidelines

3 QUALITY OF THE MANUFACTURING PROCESSES

- Our Quality System ensures compliance with current Good Manufacturing Practices (cGMP) for pharmaceutical products and ISO 22000/FSSC 22000 certifications for nutraceutical ingredients
- If a plant contains toxic, allergenic, or unwanted substances, these components are removed to obtain a purified botanical extract
- Through standardization, different lots are combined to ensure that botanical extracts always have the same composition of constituents
- Use of high-quality, precisely defined excipients helps to optimize the effectiveness of active ingredients
- Meticulous inspection of the botanical extracts is conducted

SUSTAINABILITY

Indena relentlessly works to **generate sustainable impact on its stakeholders**, protecting the **precious circle**: **Nature**, **Technology**, **People**.

NATURE

We care about **where plants are grown**, about **how they are handled**, and for **the people who are responsible for them along the supply chain**. Thanks to our **Sustainable Sourcing Program**, we guarantee the safety and wellbeing of the small producers involved in 150 supply chains. This helps to conserve **biodiversity** with a special focus on the sustainable regeneration of the wild species we market, and to **assess suppliers** for **100 botanical species** from approximately **30 countries**.
The 5 pillars in our supply chain management system are: **Full traceability**, **Supplier qualification**, **Good Agricultural Practices**, **Quality of cultivation practices**, and **Environmental risk management**.

PEOPLE

We exclusively **manufacture pharmaceuticals** and **nutraceuticals** for **people's health**, and distribute them to billions of consumers who can enjoy better lives thanks to our portfolio of **270+ products**. We implement multiple programs for **employees' wellbeing** and, as a result, our human resources record 97% permanent contracts and a very low turnover average rate of 5%. Our **European plants** are certified **ISO 45001** for occupational health and safety management systems.

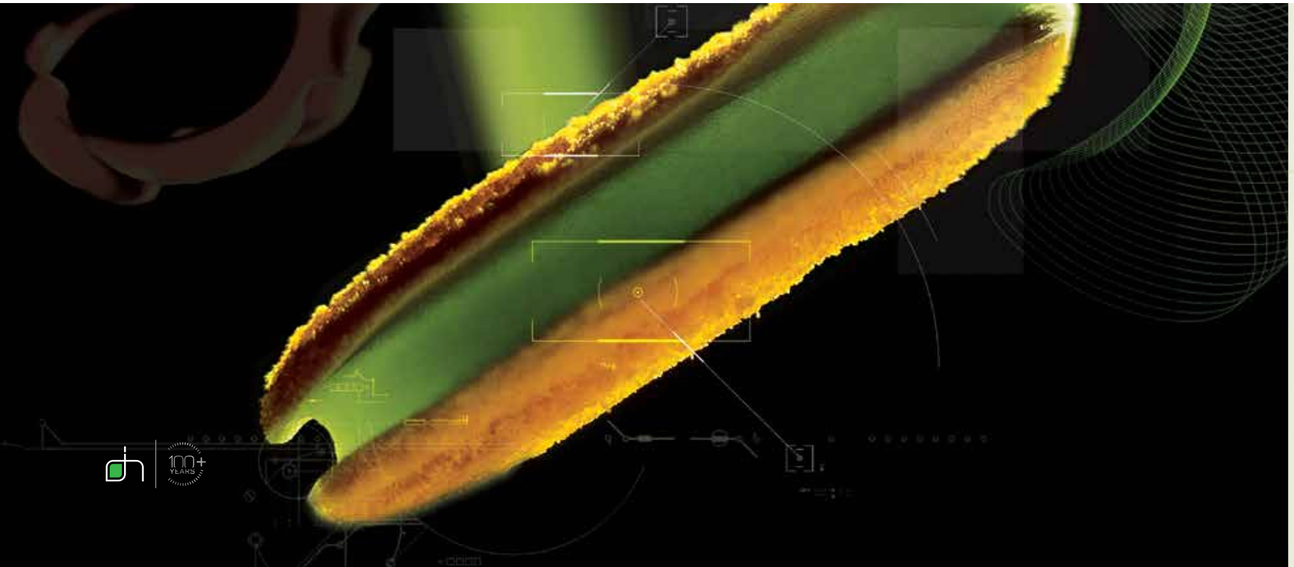
TECHNOLOGY

Technology has always been our **greatest ally** in **innovating** our business, and it is increasingly becoming **key** to **optimize** the use of **natural resources** and **turn our footprint** into **positive environmental impact**.
Thanks to investments in **energy efficiency and renewable sources**, such as photovoltaic systems, we have progressively reduced our absolute energy consumption in the past few years.
Moreover, we pay close attention to **water management**, with a special focus on the purification of water discharges.
Last but not least, **circular economy** principles are integral to our policy about **waste**, designed to implement a virtuous cycle aimed at the optimization and valorization of raw materials from production scrap.
Our **European plants** have all achieved the **ISO 14001** certification for environmental management systems.

PHARMACEUTICAL PRODUCTS

We produce isolated or semi-synthetic pure products and extracts in compliance with cGMP and supported by CTD-DMFs. Among our main products:

- 10-DAB III
- CABAZITAXEL
- CDB (NATURAL)
- COLCHICINE
- CYTISINE
- DOCETAXEL
- ESCIN
- GINKGO BILOBA
- MYRTOCYAN®
- PACLITAXEL
- RESERPINE
- RESINIFERATOXIN
- RUSCOGENINS
- SAW PALMETTO
- SENNOSIDES 45%
- SILYMARIN
- THIOCOLCHICOSIDE
- VOCLOSPORIN



NUTRACEUTICAL PRODUCTS

For over 40 years, Indena has been leveraging its solid pharmaceutical background for the nutraceutical field, developing biologically active ingredients for supplements as well as functional, medical and baby food products.
Our standardized extracts have full chemical characterization backed by quality, safety and efficacy tests. They include:

- ACMELAIN®
- BEANBLOCK®
- ENOVITA®
- GREENSELECT®
- LEUCOSELECT®
- MIRTOSELECT®
- PRODIGEST®
- MITIDOL®
- PUREBKALE™
- OPEXTAN®
- SABALSELECT®
- VIRTIVA® PLUS

NUTRACEUTICAL PRODUCTS FORMULATED WITH INDENA PHYTOSOME™

Our Indena Phytosome™ ingredients:

- ANTHOCRAN® INDENA PHYTOSOME™
- BERBEVIS®
- CASPEROME®
- CRONILIEF™
- CUBO®
- GREENSELECT® INDENA PHYTOSOME™
- MERIVA®
- QUERCEFIT®
- RELISSA®
- SILIPHOS®
- UBIQSOME®
- VAZGUARD®

CDMO
CONTRACT DEVELOPMENT AND MANUFACTURING ORGANIZATION

POSITIONING

Leveraging its analytical, development and manufacturing capabilities, Indena positions its **services** in a high added value segment, producing **complex molecules** that require both leading technologies and significant expertise in R&D and industrialization, encompassing **production of HPAPIs from early stage to commercialization**.

GOAL

Indena offers its clients the possibility of carrying out **synthetic processes** in a wide range of conditions, both for **naturally derived molecules** (from botanical sources or from microbial fermentation) **requiring semi-synthetic steps** and for **totally synthetic molecules**.

STRENGTH AND EXPERTISE

As a highly reliable Western European API producer, Indena displays a **unique capability for Highly Potent APIs down to 1ng/m³ OEL (OIB6)**, irrespective of their source. This expertise includes **payloads for ADCs**, with a **backward integration on fermentation for toxins** requiring this step and **freeze-drying ability in high-containment contexts**.

DISSEMINATING KNOWLEDGE ON MEDICINAL PLANTS

Indena acts to foster interest and innovation in medicinal plants and natural products by:

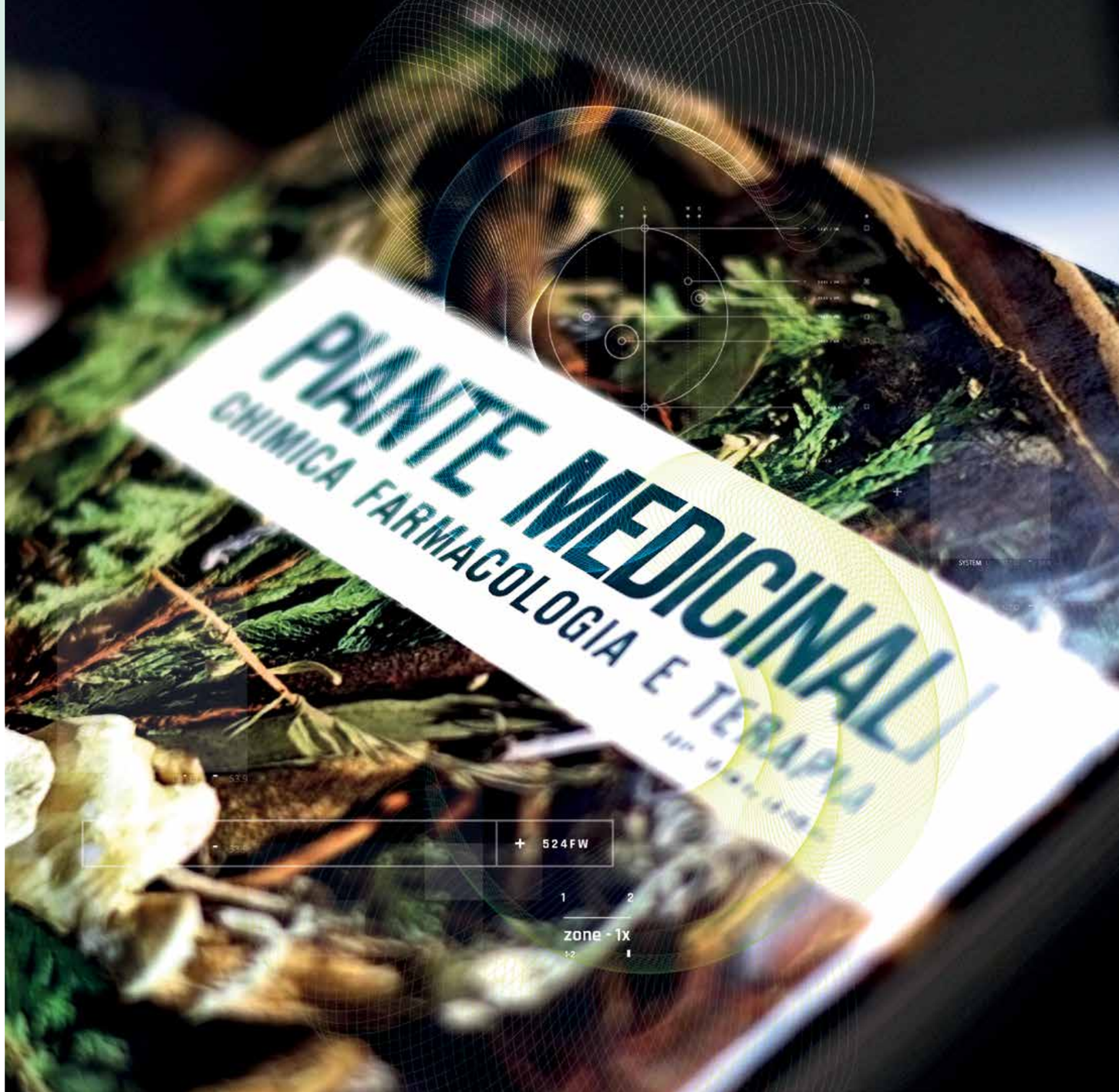
Founding **Fitoterapia**, a journal published since 1924 and today recognised as a premier source for research on medicinal plants
(2012 Impact Factor: 2.231, currently distributed by Elsevier)

Publishing **monographs** and **books** on medicinal plants

Sponsoring **masters** and **specialist schools** in phytotherapy

Offering **internships** and **scholarships** to young researchers

Supporting **doctoral programs** in drug sciences and green chemistry
that involve in-depth study of methodologies to reduce environmental impact



THE INDENA ORGANIZATION

HEADQUARTERS
Indena S.p.A.
Milano | Italy

RESEARCH CENTER
Indena S.p.A.
Settala (MI) | Italy

INTERNATIONAL BRANCHES

- Indena Biotechnology (Shanghai) Co., Ltd. | China
- Indena Brasil Ltda | São Paulo | Brazil
- Indena Japan Co., Ltd. | Tokyo | Japan
- Indena S.A.S. | Paris | France
- Indena USA Inc. | Seattle | WA | USA

THE INDENA PRODUCTION SITES

Indena S.p.A.
Settala (MI) | Italy

Bernett S.r.l.
Palestro (PV) | Italy

Indena S.A.S.
Tours | France

Indena India Pvt. Ltd.
Bangalore | India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