



VENUS ROSES

Labsolutions Ltd.

YOUR STRATEGIC PARTNER IN
EUROPEAN PROJECTS

Company profile and portfolio 2027



ABOUT COMPANY

Contract R&D and manufacturing for natural food supplements

Established in 2009, Venus Roses Labsolutions (VRLS) is a Sofia-based contract research, development and manufacturing company for innovative nutraceuticals, herbal medicines and food supplements, specialising in all-natural herbal dietary supplements.

VRLS also specialises in encapsulation methods and 3D printing of personalised medicines and supplements. For 2027 we are adding AI/ML-assisted formulation and quality control for food supplements to our offer for industry and EU research consortia.

18

years of R&D and
manufacturing (since
2009)

8

EU-funded projects
since 2016

5

EU projects running
in 2027

GMP

certified facility, FDA-
registered food facility

COMPANY TIMELINE

18 YEARS

Company growth



EU research portfolio



WHY US

Formulation science, certified facilities and proven quality



Optimal formulation

We build on the physicochemical properties of active and auxiliary substances and special techniques to reach superior quality, stability, efficacy and safety.



Facilities and equipment

GMP quality-control laboratories with state-of-the-art analytical instruments, testing to PhEur and USP and to the registration dossier. Microfluidics and 3D printing.



Quality and certificates

Manufactured to GMP; safety and stability tested. U.S. FDA food facility registration no. 12072736492.



OUR SERVICES

Four service lines, from idea to registered product



Contract research

- Idea generation
- Concept development and testing
- Prototype development and testing



Contract manufacturing

- Granules, pellets, tablets, capsules (plain and coated)
- Branded, science-backed ingredients
- Validated suppliers



Safety and regulatory

- In-house toxicologists, chemists and assessors
- Safety and regulatory assessment, country by country



Data and AI/ML (new)

- AI-assisted formulation and stability
- Quality analytics
- Shelf-life models

PROCESS

Six steps from health target to a safe, registered product

1 Target

Focus on an actual health case

2 Ingredients

Bulgarian rose oil, clinically studied actives, natural auxiliaries

3 Encapsulation

Micropellets-in-oil and other technologies

4 Quality

Certificates and stability testing

5 Packaging

Selected from validated suppliers; compatibility tested

6 Safety and regulatory

Dossier and market support



New in 2027: AI/ML support at steps 2, 3 and 4

MICROPELLETS IN OIL

One capsule, two phases: rose oil plus pellets of target ingredients



Separated phases

Active ingredients are kept apart from excipients, so they do not react during shelf life.



Multi-phase filling

Hard capsules filled with *Rosa damascena* oil and, at the same time, pellets of other actives.



High bioavailability

The formulation is designed for high bioavailability of the actives.

01

Value proposition for EU projects

What VRLS brings to Horizon Europe and MSCA consortia

WHAT WE DO IN PROJECTS

Activities we can perform in Horizon Europe projects



Be different and innovative.
Become part of our global Venus
Roses family.



Clinical studies

in vitro, in silico, in vivo



Dissemination and stakeholder engagement

WP lead in OFF-PFAS



Food supplements, nutraceuticals, functional foods



TEA and business analysis



Validation and certification



Controlled-release formulation



Regulatory affairs and IPR



AI/ML modelling and data new in 2027

PROJECT MANAGEMENT

Project management, coordination and WP leadership

- Input to technical and regulatory reporting for food supplement, nutraceutical and functional food development
- Data management (safety, formulation and stability datasets) compliant with GDPR and FAIR principles
- Updates to project meetings from formulation, validation and safety-testing tasks
- WP and task leadership: WP5 leader in OFF-PFAS (dissemination and exploitation) and EXPLORA (biological profiling); Task 2.4 leader in VERDEDRIVE

Project Management and Coordination



Technical reporting



Data management



Project meetings



Contribute updates

EXTRACTION

Green extraction, advanced encapsulation, verified safety

Extraction and purification

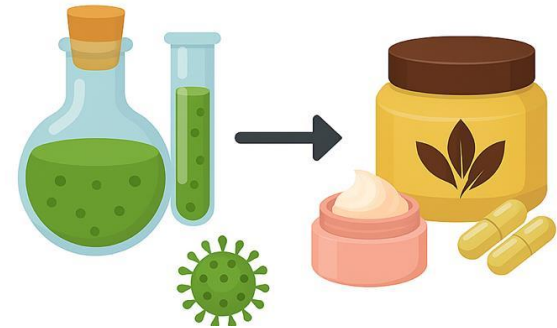
- Green methods: supercritical CO₂, ultrasound-, enzyme- and microwave-assisted extraction
- Processes that keep bioactivity, purity and safety

Formulation development

- Food supplement, nutraceutical and functional food prototypes
- Micropellets-in-oil, liposomes, microfluidics, thin-film methods

Safety and quality

- Stability, compatibility and preservative challenge tests; EU toxicological assessment



SUPPLEMENT FORMATS

Food supplements and nutraceuticals in the format each product needs



Hard capsules

Plain and coated, including vegetable-origin shells



Micropellets-in-oil

Oil phase plus pellets of actives in one capsule



Tablets

Plain and coated tablets



Granules and pellets

Spheres for controlled and delayed release



Spray-dried microcapsules

Powders that protect sensitive actives such as peptides



Protein ingredients

Isolates and hydrolysates for blends, sachets and shakes



Functional foods

Fortified bakery, e.g. protein-enriched pretzels



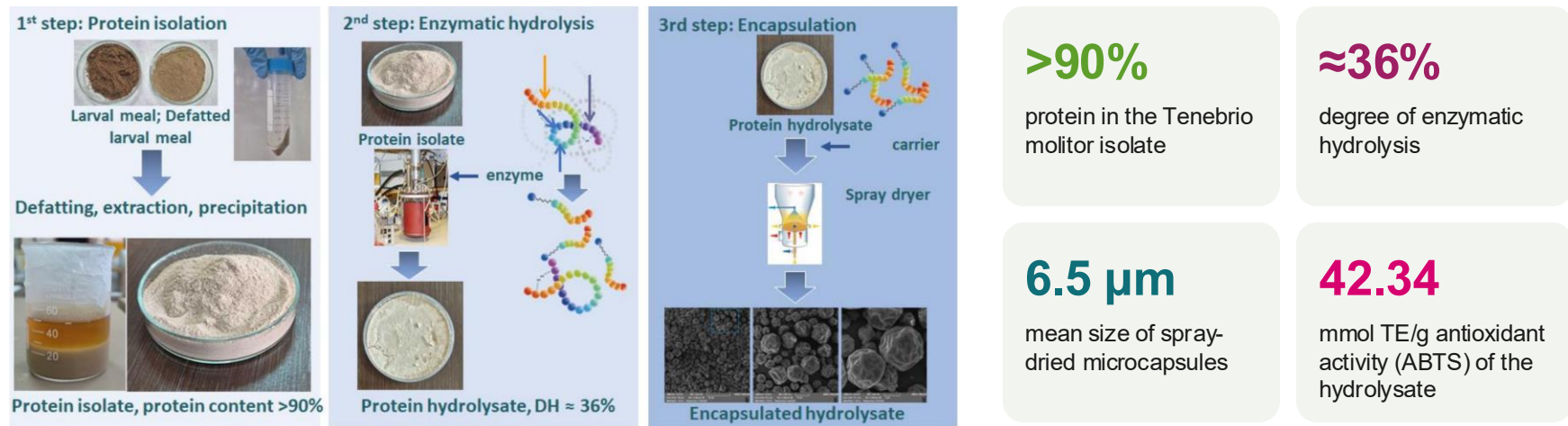
3D-printed doses

Personalised shapes, doses and release profiles

Cosmetic and nutricosmetic prototypes are also available on request.

PROTEIN TO SUPPLEMENT

From insect protein to an encapsulated peptide supplement



Result: encapsulated hydrolysate keeps its antioxidant activity and releases in a controlled way under simulated gastrointestinal conditions. Pilot-production report D3.3 submitted Aug 2026.

PRODUCT PROTOTYPES

Three business cases and a functional food from one protein source

BC1 · Insect protein isolate

B2B ingredient for bakery, pasta and sports nutrition · €20–50/kg

BC2 · Bioactive peptide hydrolysate

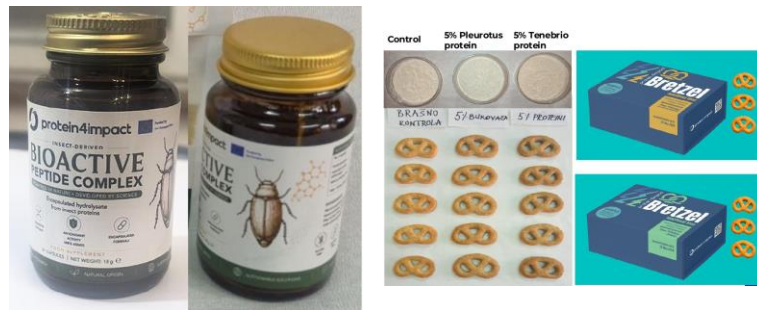
Premium B2B for nutraceuticals, clinical and sports nutrition · €100–200/kg (preliminary)

BC3 · Micropellets-in-capsule supplement

B2C: encapsulated hydrolysate with delayed release in the small intestine · €20–50/bottle

Functional food · protein-enriched pretzels

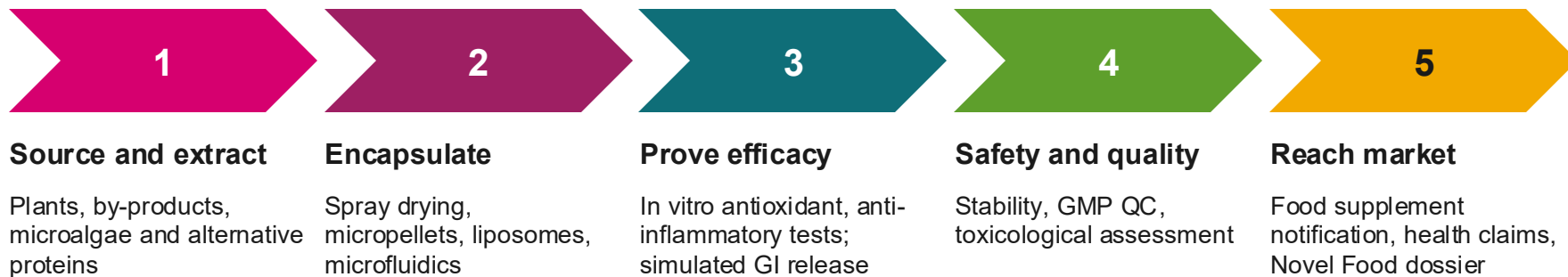
5% Tenebrio protein raises protein from 7.4% to 12.6%



Prototype packs and pretzels from Protein4Impact pilot work

FROM BIOACTIVE TO PRODUCT

Our food supplement and nutraceutical development pipeline



Track record in EU projects

PROTEIN4IMPACT

Protein-based supplements from alternative proteins: pilot, testing, validation

EXPLORA

Efficacy of new biomolecules in nutraceutical formulations

EXANDAS

Novel food supplements from aromatic-plant by-products

REGULATORY EXPERTISE

Taking food and food supplements from the lab to a compliant product



Notification and dossiers

Food supplement notification to national authorities (e.g. BFSA, Bulgaria); registration dossiers



Labels and claims

Label review and nutrition and health claim checks



Novel Food pre-assessment

Status checks and dossier support for new ingredients, e.g. insect proteins



Safety assessment

In-house toxicologists, chemists and assessors; country-by-country assessment



Regulatory roadmaps in projects

Regulatory and IPR tasks in EXANDAS, EthnoHERBS, Protein4Impact

EU rules we work with

General Food Law Reg. (EC) No 178/2002

Food supplements Directive 2002/46/EC

Nutrition and health claims Reg. (EC) No 1924/2006

Novel foods Reg. (EU) 2015/2283

Food information to consumers Reg. (EU) No 1169/2011

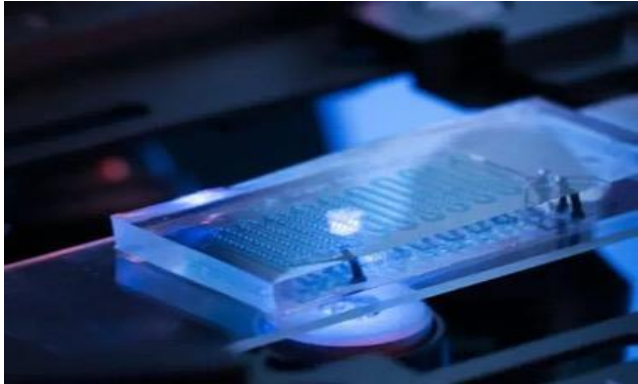
Food hygiene Reg. (EC) No 853/2004

Food contact materials Reg. (EC) No 1935/2004

Also: GMP, U.S. FDA food facility registration, Halal and Vegan certificates

NANO- AND MICRO-CAPSULES

For food supplements, nutraceuticals and nutricosmetics



Nano (0–100 nm) and **micro** (100 nm–1 mm) capsules and pellets are engineered particles that encapsulate active ingredients and improve their delivery and effectiveness. In food supplements and nutraceuticals they protect sensitive actives, mask taste and improve bioavailability. In cosmetics they also help actives penetrate the skin.

VRLS has a **microfluidic device** for homogeneous nano and micro capsules. Its process data also feed our ML models of droplet and particle size.



COSMETICS

Cosmetic prototypes from the same actives and carriers

Face cream

Hydration, antioxidant, anti-ageing, anti-inflammatory, antimicrobial (acne), UV protection

Body cream or lotion

Hydration, skin rejuvenation, anti-inflammatory, better skin elasticity

Nutricosmetic supplement

Beauty from within: collagen production, skin elasticity, hydration

Tested to EU Cosmetics Regulation (EC) No 1223/2009: stability, compatibility, challenge tests and safety assessment.

Extraction, Purification and Formulation



Face cream

- ✓ Hydration
- ✓ Antioxidant
- ✓ Anti-aging
- ✓ Anti-inflammatory (acne treatments)
- ✓ UV-absorbing
- ✓ Environmental stress



Body lotion

- ✓ Hydration
- ✓ Skin rejuvenation
- ✓ Anti-inflammatory
- ✓ UV-absorbing

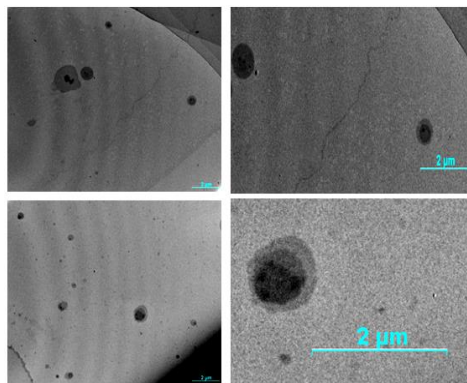


Nutri-cosmetic supplement

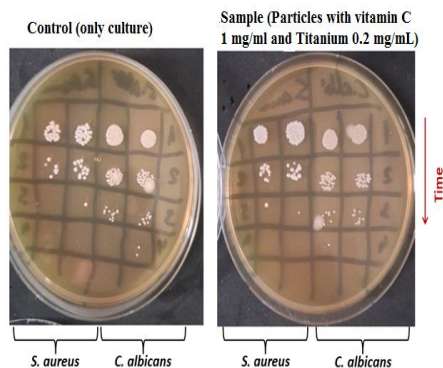
- ✓ Hydration
- ✓ Collagen production
- ✓ Skin elasticity
- ✓ Anti-aging
- ✓ Anti-inflammatory

COSMETIC LIPOSOMES

Liposomes with vitamin C and $\text{SiO}_2@\text{TiO}_2$ nanomaterials for skin care



TEM of liposomes (left); antimicrobial test, control vs sample (right)



≈92%

encapsulation of $\text{SiO}_2@\text{TiO}_2$ in the liposomes

21 days

stable at 25 °C / 60% RH
(≈370–410 nm)

85%

reduction of *C. albicans* at 50 μg/mL

+28%

ABTS antioxidant activity vs vitamin C liposomes alone

Characterised by DLS, zeta potential, SEM, TEM and Raman imaging.

Next: AI-driven chemometrics on Raman data, ex vivo penetration in artificial skin models, Raman-based shelf-life tests.

BIOACTIVITY SCREENING

VRLS leads WP5: profiling new biomolecules from extremophiles



Antioxidant

DPPH and TBARS assays



Anti-ageing

Tyrosinase, collagenase and elastase inhibition



Anti-inflammatory

COX-2 inhibition, Griess reaction, cytokine ELISA



Safety

Toxicological and ecotoxicological profiling

Work plan

M20

Toxicology and ecotoxicology start

M22

SOPs and antioxidant assays

M22

Anti-ageing enzyme screening

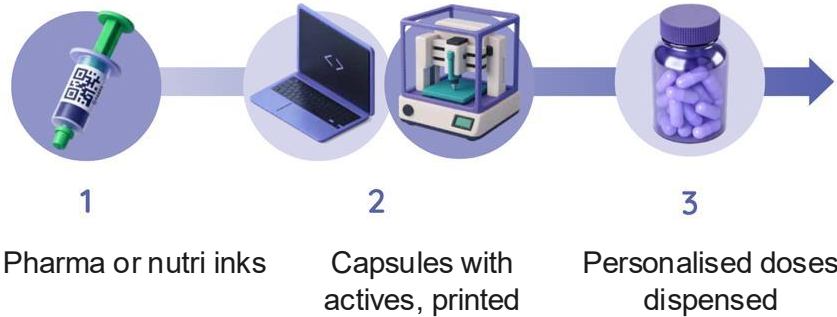
M22

Anti-inflammatory panel

Samples: 20 Antarctic bacterial extracts, Tinto River samples to follow. **Targets:** nutraceutical, cosmetic and pharmaceutical uses. **Partners:** ITENE, FISABIO, Univ. Leipzig.

3D PRINTING

3D printing of pharmaceuticals, food and supplements



- Custom drug or nutrient blends printed in precise shapes and doses
- Encapsulated bioactives for taste masking and stability
- Personalised medicine and nutrition; new textures
- Works with natural, biodegradable encapsulation materials
- VRLS has its own 3D printer for personalised pharmaceuticals and supplements

TECHNO-ECONOMICS

Will it pay off at scale? TEA built on real pilot data

1

Process model

Mass and energy balance from our pilot and GMP production runs

2

CAPEX and OPEX

Equipment, utilities, labour and materials, priced with our validated suppliers

3

Cost of goods and pricing

Cost per dose or unit, set against market prices of food supplements and nutraceuticals

4

Sensitivity and scale-up

Scenarios for batch size, yield and raw-material prices; fit with industrial lines

Example: Protein4Impact business cases

Indicator	BC1	BC2	BC3
Price band	€20–50/kg	€100–200/kg	€20–50/bottle
Main cost driver	Biomass	Enzyme, drying	Carriers, filling
Time to market	12–18 mo	24–36 mo	18–24 mo

Indicators we deliver: cost per dose, break-even volume, payback, NPV and IRR. Results feed each project's business plan.

BUSINESS ANALYSIS

Turning project results into business cases



Market analysis

Size, trends and competitors in food supplements, nutraceuticals and novel foods



Business models and plans

Business case per pilot technology, with target clients and Letters of Intent, as in Protein4Impact



Go-to-market

Channels, pricing and the regulatory route in each target country



IP and exploitation

Key exploitable results, patent scan and IP register, as in Protein4Impact and OFF-PFAS



Feasibility and risk

Feasibility studies, technology and manufacturing readiness checks



Market uptake

Routes to TRL 8–9, licensing and new start-ups, as in MET-EFFECT

STAKEHOLDER ENGAGEMENT

Bringing industry, policy makers and citizens into the project



Stakeholder mapping and advisory boards

Map who is affected; set up and run a Stakeholder Advisory Board



Workshops, conferences and co-creation

Events where partners, industry and regulators shape the results



Consumer campaigns and surveys

Multilingual awareness campaigns; acceptance surveys for new products



Industry networks

Our clients, suppliers and distributors as early adopters and test users

OFF-PFAS targets, led by VRLS

$\geq 50,000$ citizens reached, in 6 languages

$3 + 1$ workshops plus an international conference

≥ 4 major external events with joint presence

SSbD FRAMEWORK

Safe-and-sustainable-by-design (SSbD), applied to every product

SSbD is a proactive approach that builds safety and sustainability into the design of chemicals, (nano)materials and nano-enabled products. VRLS applies it in INTEGRANO and Protein4Impact, so that our pellets and microcapsules make food supplements and nutraceuticals effective, safe and sustainable.



Material selection

Non-toxic, biodegradable substances



Process optimisation

Less energy and waste in manufacturing



Life cycle thinking

Impacts across the whole life cycle



Risk assessment

Health risks to consumers and workers

SSbD IN PRACTICE

What VRLS contributes to each step of the EU SSbD framework

1

Hazard of the material

Toxicological profile of actives, carriers and excipients

2

Safety in production

Worker-safety and process data from our GMP manufacturing

3

Safety in use

Stability, compatibility and in vitro safety of the final product

4

Environmental sustainability

Material and energy inventory data for partners' assessment

5

Socio-economic sustainability

TEA, market and business analysis

Applied in Protein4Impact: mild enzymatic hydrolysis without harsh chemicals, maltodextrin by-product as carrier, circular feedstock, low-energy drying.

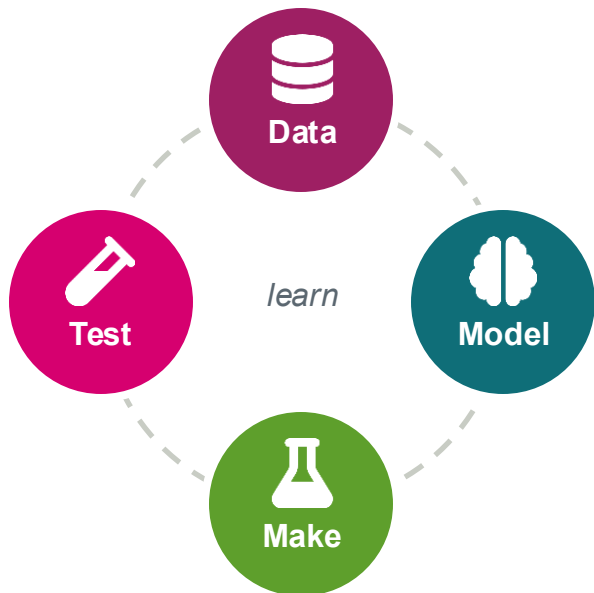
02

AI/ML for food supplements

New in 2027: data-driven formulation and quality, tested in our own pilot lab, plus packaging case studies

AI-DRIVEN INNOVATION

A design-make-test-learn loop that links models to our pilot lab



AI-powered material selection and formulation

- Predictive models that optimise ingredient combinations for stability, bioavailability and efficacy
- ML screening of large datasets for the best natural compounds

AI-enhanced R&D

- Discovery of new bioactives with health benefits
- Simulations for next-generation encapsulation
- Prediction of interactions with cells and tissues, and of toxicity

FOOD SUPPLEMENTS

Six AI/ML services for food supplement R&D



Botanical screening

Cheminformatics on phytochemical data to shortlist bioactives and synergistic blends



Formulation optimisation

Bayesian optimisation and DoE that cut lab iterations for pellets, capsules and liposomes



Stability and shelf life

Models trained on accelerated-stability data predict loss of sensitive actives



Release and bioavailability

Prediction of dissolution and release from controlled-release pellets and microcapsules



In-silico safety

QSAR and read-across alerts that support EFSA and Novel Food dossiers



Personalised nutrition

Dose and release design for 3D-printed, personalised supplements

QUALITY AND MANUFACTURING

From raw-material authenticity to batch release



Botanical authentication

NIR, FTIR, Raman and HPTLC fingerprints with chemometrics and ML to detect adulteration, e.g. of rose oil



Computer-vision QC

Capsule and pellet defects, fill level and particle-size distribution from images



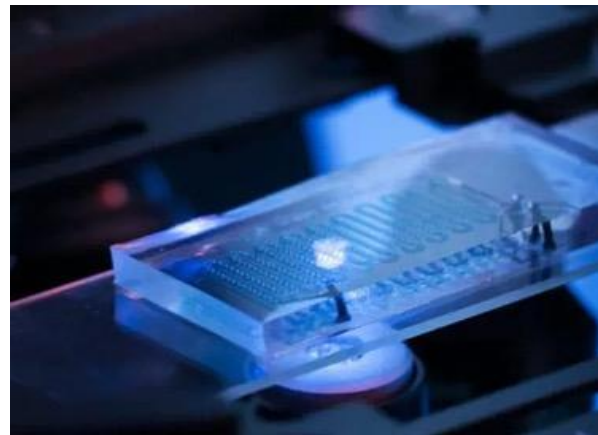
Process models and digital twins

Predict droplet and particle size from microfluidic flow settings; tune coating and drying



Regulatory intelligence

Language models that screen EFSA opinions, health-claim and Novel Food registers



Data from our microfluidic device, 3D printer and QC lab feed the models, and the lab validates every prediction.

PACKAGING CASE STUDIES

Our role in packaging projects: testing the product in the pack

VRLS does not produce packaging. In packaging projects we are the end-user case study: we test our food supplements in contact with the new packaging.



Real case-study products

Capsules, pellets, oils and powders with sensitive actives such as rose oil and vitamins



Product-pack compatibility

Sorption, colour, odour and physical changes of the supplement in the new material



Stability and shelf life

Real-time and accelerated stability in our QC lab; assay of actives over time



Samples for migration tests

Filled packs and product data for migration testing by partner labs



AI/ML shelf-life models

Predict loss of actives from the pack's barrier data and shorten test time



End-user requirements

Filling, handling and consumer-use needs of a supplement manufacturer

WHY NOW

New packaging rules need testing with real products

12 Aug 2026

PPWR PFAS limits apply to food-contact packaging: 25 ppb per PFAS, 250 ppb sum, 50 ppm total PFAS

2030

PPWR design-for-recycling criteria, minimisation and recycled-content rules start to apply

≥ 50,000

citizens to be reached by the OFF-PFAS consumer campaign that VRLS leads, in 6 languages

How VRLS helps as a case-study partner



OUR OFFER TO CONSORTIA

AI/ML and testing tasks VRLS can lead or contribute

Task	Typical outputs	Fits
AI-assisted formulation and stability modelling for food supplements	Validated models; optimised prototypes at TRL 4–6	Cluster 6, MSCA
Botanical authentication and quality analytics	Spectral libraries; classification models	Cluster 6
Case studies for new food-contact packaging	Stability and compatibility data of supplements in new packs	CBE JU, Cluster 6
In-silico safety and regulatory intelligence	Read-across reports; claim and compliance screening	Cluster 6, MSCA
FAIR data management for formulation and test data	Data management plan; open datasets	All programmes

03

EU projects and collaborations

Eight EU-funded projects since 2016, five of them running in 2027

PORTFOLIO 2016–2030

Eight projects with a growing role for VRLS

Project	Programme	Period	VRLS role	2027
OFF-PFAS	MSCA Staff Exchanges	2026–2030	WP5 leader: dissemination, networking, exploitation, IP	New
VERDEDRIIVE	MSCA-2023-SE-01	2025–2028	T2.4 catalyst lead; communication and exploitation	Running
PROTEIN4IMPACT	CL6-2024-FARM2FORK-01	2025–2027	Protein-based supplements: pilot, testing, business plan	Final year
EXPLORA	CL6-2024-CIRCBIO-01	2024–2028	WP5 lead: profiling and safety of biomolecules	Running
INTEGRANO	CL4-2023-RESILIENCE-01-22	2024–2027	Validation of nano-enabled products; SSbD	Final year
MET-EFFECT	MSCA-2021-SE-01	2023–2026	Drug-delivery formulation, pilot scale	Completed
EthnoHERBS	MSCA-RISE-2019	2019–2024	Natural-product formulation, stability, regulatory	Completed
EXANDAS	MSCA-RISE-2015	2016–2020	Controlled-release formulation, regulatory, IPR	Completed

OFF-PFAS · NEW



Start date	1 Nov 2026
End date	31 Oct 2030
Duration	48 months
Partners	8
Call	MSCA Staff Exchanges
Secondments	75 (257 person-months)
GA No.	101344717

PFAS exposure, accumulation and risk: an information platform, policy briefs and a PFAS Strategic Advisory Document

Role of Venus Roses

- WP5 leader: dissemination, networking and exploitation (T5.1–T5.3)
- Dissemination, Communication and Exploitation Plan (D5.1, M9)
- 3 workshops, an international conference in Oslo, ≥4 external events
- Consumer awareness campaign in 6 languages, ≥50,000 citizens
- Exploitation plan, IP register and the PFAS Strategic Advisory Document (D5.5)

VRLS

IOCCP-BAS

NILU

UNIWA

APIVITA

1MOL



Funded by
the European Union

PROTEIN4IMPACT



Start date	1 Jan 2025
End date	31 Dec 2027
Budget	€5,273,375
Partners	17
Call	HORIZON-CL6-2024-FARM2FORK-01
Website	cordis.europa.eu/project/id/101182324
GA No.	101182324

Impact of alternative protein sources to improve nutrition

Role of Venus Roses

- Task 3.3: conversion of alternative proteins into protein-based supplements; pilot production, testing and validation
- Encapsulated insect-peptide hydrolysate and micropellets-in-capsule prototype; D3.3 submitted Aug 2026
- Market analysis, business plan, IPR and exploitation for each pilot technology

Coordinator and key partners



VERDEDRIIVE



Start date 1 Jan 2025

End date 31 Dec 2028

Budget €1,633,000

Partners 8

Call HORIZON-MSCA-2023-SE-01

Website cordis.europa.eu/project/id/101179991

GA No. 101179991

Harnessing by-products for the creation of eco-friendly and sustainable diesel fuel

Role of Venus Roses

- Task 2.4 leader: evaluation, performance and optimisation of catalysts for green diesel
- Communication, exploitation, dissemination and public engagement

Coordinator and key partners

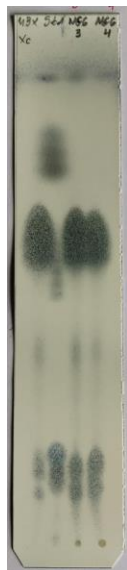


University of Belgrade
Faculty of Technology and Metallurgy



GREEN DIESEL CATALYSTS

VRLS leads Task 2.4: catalysts that turn oils into green diesel



High-pressure reactor (left); TLC of products (right)

Catalysts synthesised

- TiO_2/NiO with 10–60 wt% NiO, by sequential dry impregnation
- NiO/graphene nanocomposites (0–0.5 wt% graphene), calcined at 450 °C

Solvent-free hydrogenation of grapeseed oil

- Target: 200–300 °C, 20 bar H_2 , 1–5 h, biodiesel yield above 90%
- First runs (12 bar, 220–250 °C): mono- and diglycerides and fatty acids form; GC-MS shows partial hydrogenation

Next

- Reactor upgrades (pressure valve, H_2 line), then optimisation of loading, temperature and catalyst regeneration

EXPLORA



Start date	1 Dec 2024
End date	1 Dec 2028
Budget	€4,493,838.75
Partners	13
Call	HORIZON-CL6-2024-CIRCBIO-01
Website	cordis.europa.eu/project/id/101181841
GA No.	101181841

Unlocking the hidden treasures of aquatic extremophiles: sustainable development of industrially relevant novel active biomolecules

Role of Venus Roses

- WP5 leader (M20–M48): biological profiling, safety validation and end-user applications of pure biomolecules
- Antioxidant, anti-ageing and anti-inflammatory screening; validation in nutraceutical and cosmetic formulations
- Toxicological and ecotoxicological profiling

Coordinator and key partners



INTEGRANO



Start date	1 Jan 2024
End date	31 Dec 2027
Budget	€3,985,648.75
Partners	12
Call	HORIZON-CL4-2023-RESILIENCE-01-22
Website	www.integrano.eu
GA No.	101138414

Multidimensional integrated quantitative approach to assess safety and sustainability of nanomaterials in real case life cycle scenarios using nano-specific impact categories

Role of Venus Roses

- Development, verification and validation of nano-enabled products (nutri-cosmetic, cosmeceutical devices)
- Vitamin C liposomes with $\text{SiO}_2@\text{TiO}_2$: $\approx 92\%$ encapsulation, 21-day stability
- Standardised protocols for functional testing and validation

Coordinator and key partners



MET-EFFECT



Start date	1 Jan 2023
End date	31 Dec 2026
Budget	€763,600
Partners	6
Call	MSCA-2021-SE-01
Website	www.met-effect.com
GA No.	101086373

Metal complexes of a naturally inspired framework functionalised for cytotoxic and catalytic efficiency

Role of Venus Roses

- Formulation of innovative drug-delivery systems
- Pilot-scale production
- TRL 8–9 through market uptake and new start-ups for green pharmaceuticals in personalised medicine

Coordinator and key partners



Faculty of Chemistry
University of Belgrade



IST-ID
Associação do Instituto Superior Técnico
para a Investigação e Desenvolvimento



EthnoHERBS



Start date	1 Oct 2019
End date	30 Sep 2024
Budget	€2,447,200
Partners	15
Call	MSCA-RISE-2019
Website	www.ethnoherbs.eu
GA No.	823973

Conservation of European biodiversity through exploitation of traditional herbal products: culturing a European hotspot of medicinal plant biodiversity

Role of Venus Roses

- Formulation of natural products; stability and safety assessment
- Feasibility study for new commodities from natural products
- Pilot scale and downstream process optimisation; regulatory affairs

Coordinator and key partners



Universidade do Minho
Instituto de Educação



Start date 1 Mar 2016

End date 29 Feb 2020

Budget €2,178,000

Partners 10

Call MSCA-RISE-2015

Website cordis.europa.eu/project/id/691247

GA No. 691247

Exploitation of aromatic plants' by-products for the development of novel cosmeceuticals and food supplements

Role of Venus Roses

- Controlled-release formulation procedures
- Active ingredients in novel cosmeceutical and nutraceutical formulas
- Regulatory affairs, IPR and feasibility study

Coordinator and key partners



THANK YOU FOR YOUR ATTENTION

Let's build your next EU project together



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