


SAYENS SATT
CATALYSEUR D'INNOVATIONS

Making science the future of innovation

COSMETIC 360 | 18-19 OCTOBER 2023



EXTRACTS FROM BARKS

Technology matured by  SAYENS SATT
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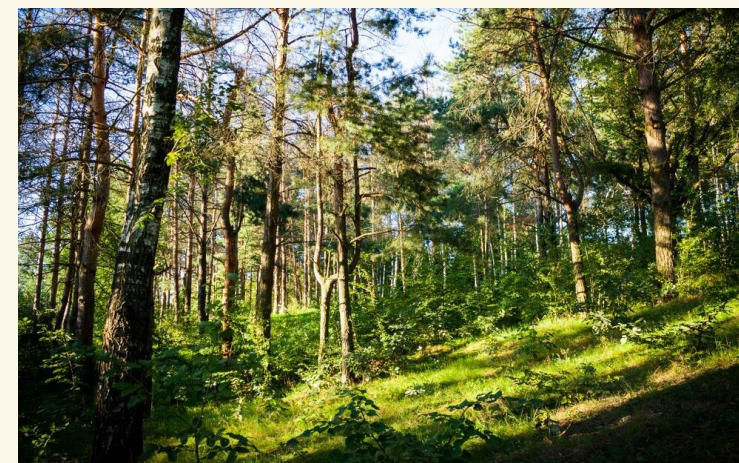
#biosourcing

#french origin

#sustainability


The forests of the Est region of France represent a unique bark resource. As part of a sustainable development approach and the valorization of wood industry waste, the use of bark is a source of extracts with cosmetic potential. Together, we can assess your needs and put you in touch with the best placed manufacturers or develop specific projects with the support of expert researchers in the field.

From bark to skin, creation of a new French sector



Development stage:
concept validation

SMART IN PACK

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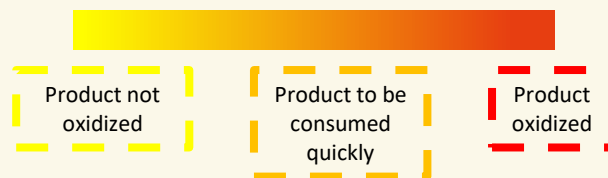
#oxydation

#strip

#freshness

To fight against waste and ensure the organoleptic qualities of cosmetic products, we offer an innovative solution based on a new method for detecting oxidation in raw materials and finished products.

Principle : after applying a small part of the product to the strip, real-time color changing indicating the oxidative state of the product.




A highly sensitive sensor (in the form of a strip) able to detect oxidation marker compounds in food and cosmetic products



Development stage:
experimental prototype

P450 DISPLAY

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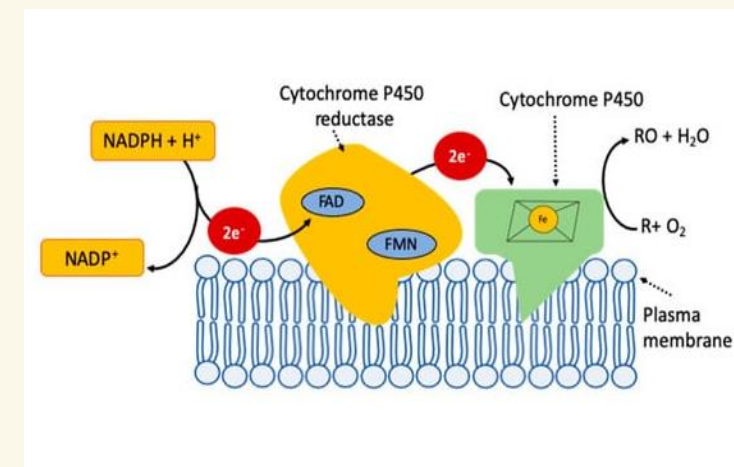
#enzymes

#synthesis

#bioconversion


CYPs from plants are numerous and play a part in a wide range of oxidation reactions (mostly hydroxylation). They enable the production of numerous bioactive compounds that can be used in cosmetics products : various fatty acids, antioxidants, plant hormones, secondary metabolite... Unfortunately, plant CYPs still have very limited uses in the industrial world, due to their intracellular localization, linked to the endoplasmic reticulum and the necessary presence of a co-enzyme (P450 reductase) for most of them. Our process enables the P450+coenzyme pair to be synthesized and then anchored to the outer membrane of the *Escherichia coli* cell wall for more efficiency and stability.

Optimum use of plant P450 enzymes for the synthesis of biomolecules



Development stage:
concept validation

ICROSIMMA

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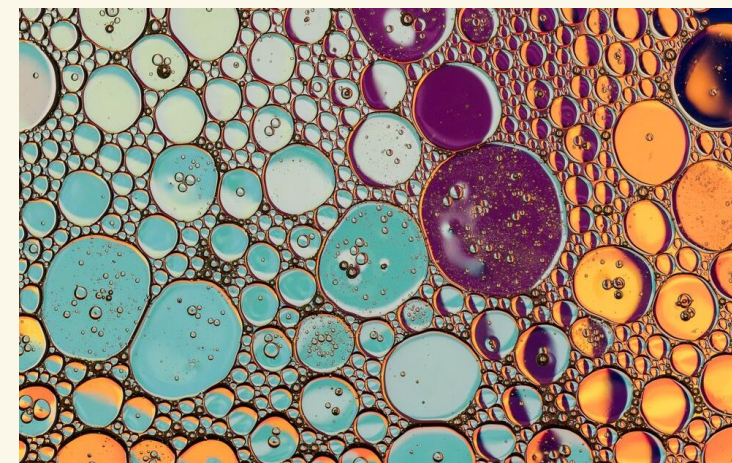
#extracts

#molecules

#greentech


This invention helps to optimize and reduces the environmental impact during isolation and concentration processes of molecules. It uses magnetic mesoporous materials based on silica (3MS). This technology is able to specifically bind and concentrate molecules of interest, in a complex mixture, by applying an external magnetic field. The 3MS are then washed to recover the molecules of interest in a small volume. The 3MS are reusable. It allows less solvent and heavy industrial processes.

Isolation and concentration of organic molecules of interest in extracts thanks to magnetic mesoporous silica



Development stage:
concept validation

PHYTOBOIS

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#phytosterols

#bark

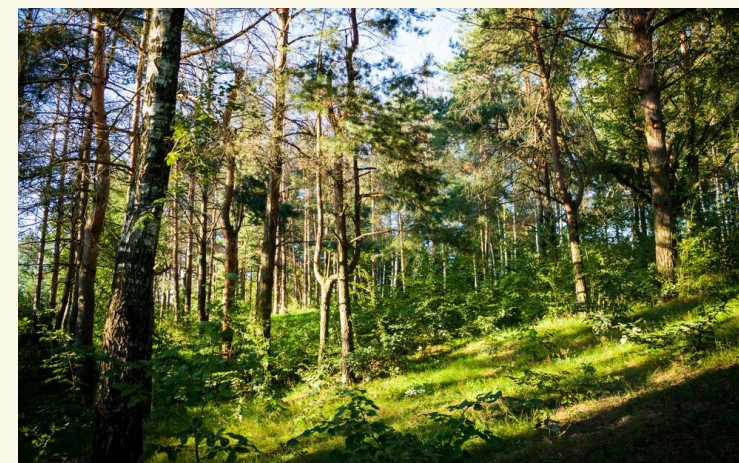
#lipophilic fraction

Phytosterols are sought-after in cosmetics due to their many bioactive properties such as : antioxidative, antimicrobial, anti-inflammatory

In consequences many products contain phytosterol, notably anti-aging creams.


Barks are underused. We propose an optimized process to extract these compounds from local woods.

Process for extracting phytosterols from softwood bark using supercritical CO2 method



Development stage:
concept validation

FPRAU

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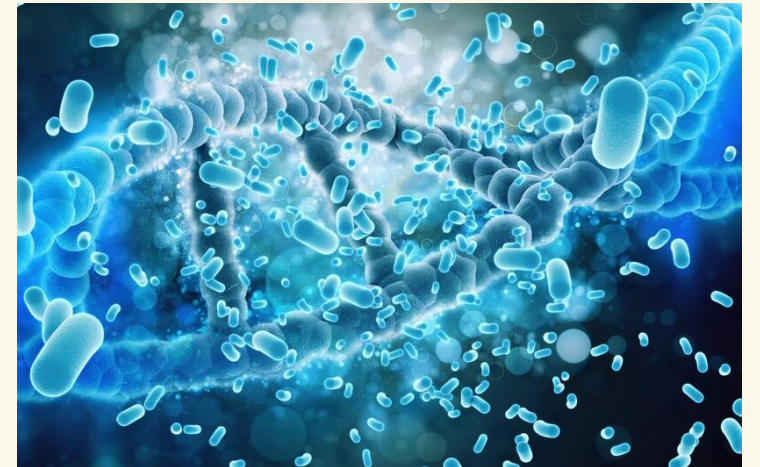
#vegan

#probiotics

#allergen-free


Vegan free culture media for the production of probiotic bacteria

- Optimized media free of animal-origin compounds
- Compatible with food legislation
- Excellent bacterial growth for *F.prausnitzii* & *F.blautia* bacterium
- Less expensive media composition, less compounds



Development stage :
pre-pilot

POP IN NOSE

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#fragrances

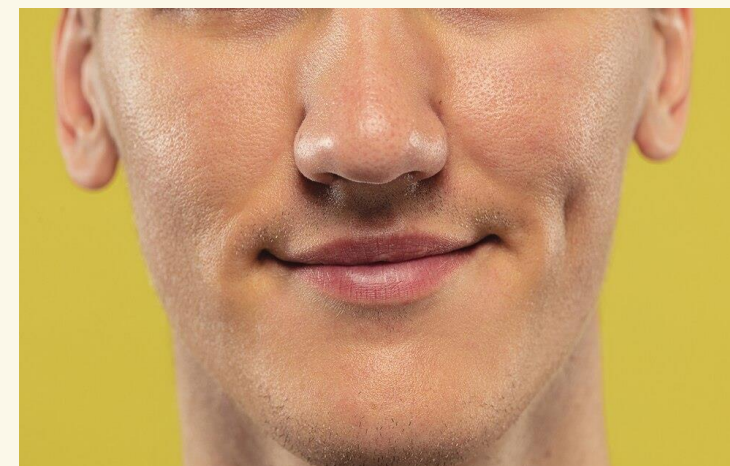
#interactions

#perception

A small laboratory instrument that can be used to screen in an olfactory way, mixtures of two interacting fragrances.

Without a mixing step required, the use of this device is quick and easy. Moreover, it is portable and inexpensive.

Mechanical olfactometer to study the olfactory interactions between two fragrances



Development stage:
concept validation

RECOMBINANT PROTEINS



#Proteins

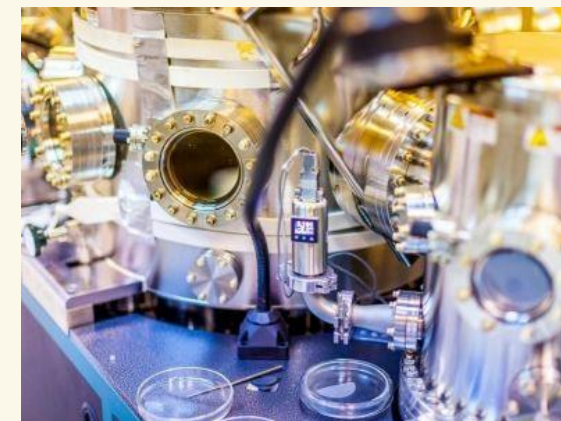
#Cosmetics

#Enzymes

Develop and produce new molecules for therapeutic or diagnostic purposes. Design and develop active ingredients for innovative cosmetic products. Substitute chemical processes with enzymatic alternatives.

- Design and production of functional recombinant proteins, characterization ;
- Microbiological and enzymatic engineering ;
- Development of fermentation processes (bacteria, yeast, fungi, mammalian cells) from the laboratory to the pre-industrial stage ;
- Detection and quantification of toxins in finished products.

Laboratory / team or platform : Biotech'Innov Protéines Recombinantes / UMR CSGA uB/INRAE



GREEN CHEMISTRY AND BIORESOURCES : ECORESPONSIBLE PROCESSES



#Green chemistry

#Environment

#Ecomaterials

Design more environmentally-friendly materials, such as bio-sourced materials. Reduce the resources and costs involved in your production processes. Optimize your energy and material expenditure and/or control, reduce and recycle your wastes. Develop new products or processes based on renewable or inexhaustible raw materials as part of an eco-innovation approach.

- Design, characterization and formulation of bio-based polymers and copolymers ;
- Design of eco-friendly materials using organometallic catalysis and ligand chemistry ;
- Development of processes involving the activation of strategic molecules such as H₂ and CO₂ ;
- Chemical valorization of biomass and biobased reagents (alcohols, phenols, heterocycles, etc.) ;
- Catalytic exploitation of abundant, non-toxic and inexpensive metals ;
- Use, control and recycling of alternative solvents : glycols, CO₂, supercritical or ionic liquids ;
- Use of electrosynthesis for alternative processes that are ultra-efficient in terms of materials and energy.



Laboratory / team or platform : Institut de Chimie Moléculaire de l'Université de Bourgogne / UMR 6302

STUDY OF THE SUITABILITY OF PACKAGING TO BE IN CONTACT WITH FOODSTUFFS



#Packaging

#Agri-food

#Food and Feed

- Development of extraction protocols for testing on complex matrices ;
- Control of the absence of toxic effect of packaging migrates with biological tests, carried out on different cell lines ;
- Cytotoxicity and Genotoxicity tests ;
- Oxidative stress tests (DCFDA test, DHE test) ;
- Endocrine disruption tests (transcriptional activation test for estrogen receptor, androgen receptor, steroid synthesis test) ;
- Cellular transformation tests.

Laboratory / team or platform : Plateforme DERTTECH PackTox

Detection of the potential toxicity of food contact packaging and identification of endocrine disruptors in these packaging compounds.

