



The new consumption behaviours of cosmetic products : post-covid

Heavily impacted by the coronavirus crisis, the perfumery and cosmetics industry is questioning **the sustainability** of its industrial and economic model. To this end, a broad consultation is being launched as part of the general assembly organized by Cosmetic Valley competitiveness cluster to revive the industry. Participants were **invited to share their thoughts** on 12 themes to identify the changes in our industry's businesses: marketing, BtoC & BtoB sales, export, innovation, production, supply chain, purchasing, financing, regulatory, human resources, quality-health-safety-environment. The results have been presented on October 15, 2020.

Among the first subjects of reflexion : **the appearance of new consumption behaviours**. After a few months, the health crisis has emphasized the essential character of cosmetic products. They have singularly proved to be unavoidable in the daily life of consumers. Several major trends have thus emerged and correspond in particular to the observations that led to the creation of the AgriWasteValue project.

Towards more responsible consumption : zero waste and short circuits

The relationship to consumption itself is being profoundly questioned. In this context, a quest for meaning in consumption patterns has been manifested from the very beginning and is continuing. From individual concern to a **more collective commitment**, the coronavirus crisis has finally **increased expectations in terms of sustainability and responsible consumption, but also around zero waste and short circuits**.

Zero waste and short circuits, two ideas that AgriWasteValue puts forward and tries to achieve, in its research, but also by making available a digital map that lists the places where raw materials are available for use in cosmetics and nutraceuticals.

More on the www.agriwastevalue.eu website

The return of tree tapping, “gemmaage”, in France

The harvesting of molecules present in the gum of trees, totally abandoned since the 1990s in France, could be resumed. Scientific research aims to offer new outlets for these molecules of great interest.

“Gemmaage” made in France

Tree tapping, or “gemmaage” in French, is a thousand-year-old practice (the Greeks were already familiar with it) and consists of making an incision in the bark of coniferous trees.

In France, “gemmaage” is above all a South-Western tradition. At the beginning of the 20th century, it was an important activity in the Landes forest. **The technique consisted in making a wound in the bark to make the resin come out.** Sulphuric acid was applied to keep the wound open. A recovery system was installed. This allowed the resin of a tree to be exploited little by little during part of its life or it could be decided to “empty” it three or four years before it was felled so that its foot log could be turned into lumber. If the Landes were the main production centre, it is because the species most present was **maritime pine**.



“Gemmaage” made in France

The gum becomes oleoresin when it is rid of its impurities (rain-water, needles...) and turns into turpentine after clarification.

Once distilled, it provides **two products**: one solid and odourless product is rosin composed of resin acids. The other is liquid and fragrant, it is the famous turpentine essence composed in particular of molecules of interest that are alpha and beta-pinenes. The uses are well known: **solvents for paints, disinfectant, expectorant, fuel, etc.** Applications are constantly diversifying and global demand is exploding.

However, gemmings have practically disappeared in Europe over the last thirty years or so due to a lack of profitability.

The InTiCosm project

The INTICOSM (Innovative Trends in Cosmetics) Interreg France-Wallonia-Vlaanderen project aims at the cross-border **development of bio-based compounds and their use in the field of cosmetic formulation.**

From “green cargo ships” to cosmetics

These compounds, known as green cargo ships, will preferably be made from bio-sourced molecules originating primarily from biorefineries in the Franco-Belgian region (in particular the Pomacle-Bazancourt biorefinery near Reims, the largest in Europe, and BioWanze in Wallonia, the largest bioethanol producer in Belgium, by respecting

the principles of green chemistry as much as possible, in particular by reducing the use of solvents and the number of synthesis stages. It will be considered to prepare cargo ships that can selectively release cosmetics according to the environment or temperature. Regulatory constraints and costs will be taken into account to establish their competitiveness compared to existing petro-sourced compounds. This part will be carried out in France (URCA) and in Flanders (UGent).



The molecules obtained will then be used in the formulation of cosmetics; the encapsulation power will also be studied by advanced methods, as will their toxicity. This study, scheduled respectively in France (ULille) and in Wallonia (Gembloux Agro-BioTech), will make it possible to establish a structure/reactivity framework that will lead to the choice of a few cargo ships (the most efficient and least expensive) which, after passing through synthesis on a larger scale, can be tested with industrialists in the INTERREG France-Wallonia-Vlaanderen zone.

VITO and the Centre de ressources technologiques en chimie CERTECH will be able to facilitate the transfer of technology by proposing precise specifications and by facilitating gateways to the cross-border industrial fabric with the support of competitiveness clusters on each of the three sides (the French competitiveness cluster Industries des Agro-Ressources (IAR), Greenwin and Catalisti).

A training through education component (M/D levels) will be carried out by the French and Belgian partners and the involvement and experience of Acustica and Vivasciences in this project will facilitate communication to the "general public" via exhibitions, experience packages or other

visual supports (high schools, colleges, cultural centres) in the regions concerned. The INTICOSM project is part of the common will of the (involved) partners to collaborate as cross-border actors in the field of bio-economy for cosmetics.

This project will take place from January 1st, 2019, to December 31st, 2022.



Milking plants by the roots for make-up, care, etc.

Plant Advanced Technologies biotech has been commercializing plant molecules for fifteen years, which it obtains by soliciting the roots of plants. The cosmetics industry, but also pharmaceutical laboratories and food groups are interested in this rare resource.

"Milking" plants

"Plants hate nature." This statement by a Dutch horticulturist has guided the biotech company Plant Advanced Technologies (PAT), which holds the patent for "milking plants", for the past 15

years. In their natural state, **plants compete fiercely for water, light and nutrients.** To protect themselves from the onslaught of fungi, animals and other plants, they have developed valuable molecules that humans have long known how to use. But he has always had to destroy the plant in order to extract aspirin from the spirea, curare from the Strychnos toxifera vine or taxol from the yew.

And what if, instead of pulling it out, we pampered the plant so that it continuously secretes the coveted molecules? The idea germinated in 1999 in the minds of two researchers from the Agronomy and Environment Laboratory at Ensaïa, in Nancy.



To all intents and purposes, Frédéric Bourgaud and Eric Gontier patented the concept of **an industrialized sampling of root exudation from the soil under the name "milking plant"**. Three years later, Jean-Paul Fèvre, former director of research for the Eurialis agricultural cooperative in France, Argentina and the United States, moved to Nancy to take a closer look at an absolutely new method of cultivation.

Anti-aging

PAT won the national prize for business creation as soon as it was created in 2005. The milking plant concept amuses journalists, interests the cosmetics industry and attracts investors. The team, which was thinking of positioning itself on the pharmaceutical market, won its first R&D contract with Chanel for an anti-aging product extracted from edulis, a fatty plant native to South Africa. In 2009, in the midst of the financial crisis, it managed to raise €9 million on the Euronext free market. Introduced at 12 euros, the share is now trading at around 20 euros, after peaks at 30 euros.

In the meantime, PAT has acquired 3 hectares of horticultural greenhouses in Laronxe (Meurthe-et-Moselle). About twenty species of plants grow there at one meter above the ground, their roots bathing in a trough. A fine mist provides them with the necessary nutrients, but also with elicitors, compounds emitted by aggressors and which stimulate their defenses, almost the concept of a vaccine.

Thus spurred on, they excrete up to a thousand times more rare molecules than they would have produced by trituration. Three to six times a year, the “milking” is done either by pressure (osmotic) before filtering the bath water. Or by cutting the fine part of the roots, which will be crushed or dried, while the plant continues to grow slowly. The in vivo extraction allows to harvest on 1.000 square meters of greenhouses the equivalent of 30 hectares of cultivation.

White mulberry tree

The growth will have been long, but the ex-start-up is starting to bear fruit. It has evolved into a group whose parent company, based in Vandoeuvre-lès-Nancy, employs 40 people, including 20 PhDs in biology, and generated 1.7 million euros in sales in 2019. The partnership, signed last November with the chemist Clariant, now enables PAT to indirectly supply cosmetic groups worldwide. In February, this cooperation resulted in the launch of the anti-wrinkle product Prenylium, extracted from the root of the white mulberry tree.

“We are molecule discoverers. We are discoverers of molecules. We put a unique technique in the world at the service of a scientific approach applicable to cosmetics, but not only to it,” emphasizes Jean-Paul Fèvre.

Fermentation

The group has acquired half a dozen satellites created from scratch, bought out or co-developed. The Belgian company Straticel tests cosmetic molecules in vitro. Rochefortais Couleur de Plante revives the ancestral techniques of vegetable dyes. In Reunion Island, Pat Zerbaz - from the Creole name for medicinal plants - promotes, while protecting them, endangered species. In Nancy, Temesis is entirely devoted to the development of an effective anti-inflammatory against psoriasis. Cellengo, the latest cutting to date, specializes in microbial fermentation. The platform proposes to industrialize biomolecules to provide active ingredients to the cosmetic, nutraceutical, pharmaceutical and phytosanitary markets, without consuming agricultural land.



Extracts of vine shoots: vegetable raw material, extraction methods, quantification and applications

The MDPI revue, with the article “Grapevine Cane Extracts: Raw Plant Material, Extraction Methods, Quantification, and Applications”, presents an in-depth study of the composition and concentration of stilbene in vine shoots, which are generally not valorised viticultural co-products.

Different methods of extracting stilbenes from vine shoots were reviewed, and the extraction conditions were also studied, highlighting the advantages and disadvantages of each technique.

The extracted stilbenes were then analysed to determine stilbene composition and concentration.

Stilbene extracts have applications in several fields depending on their properties. The five most relevant applications here are preservatives, antifungals, insecticides and biostimulants.

Access to full article : <https://www.mdpi.com/2218->



Upcoming event



January 26, 2021 - ONLINE

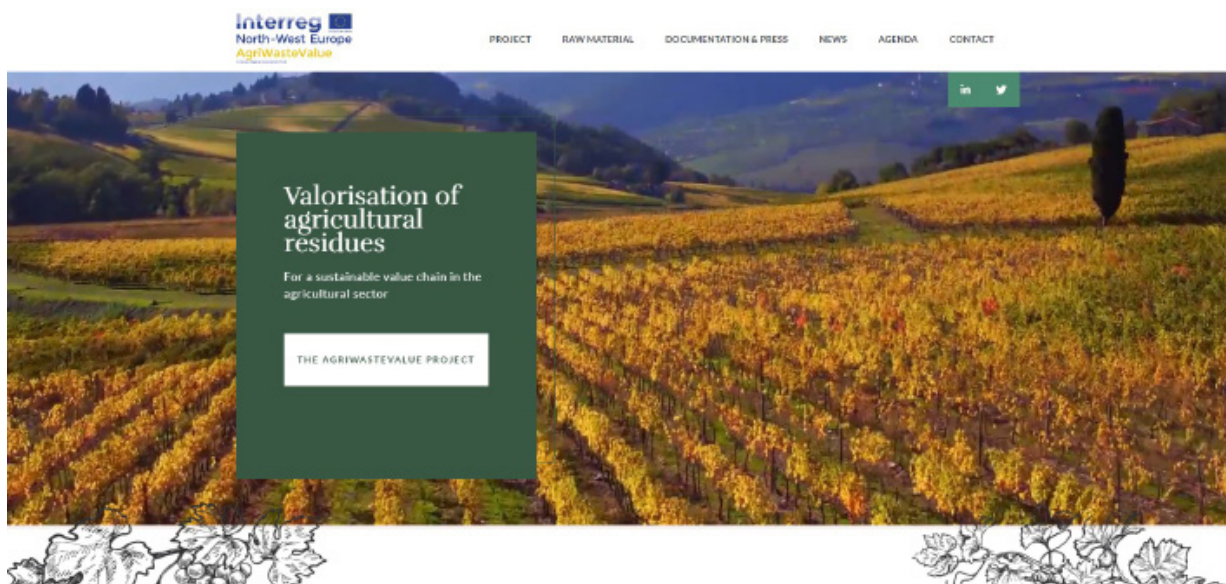
The mid-term event of AgriWasteValue, “Molecules of interest for cosmetics and nutraceuticals” will be held during NutrEvent Digital, ONLINE, on January 26, 2021.

On the agenda : results of AgriWasteValue project halfway through, interventions of a cosmetic and a nutraceutical companies, questions & answers sessions, networking...

Free event on registration (event in English)

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