

# Combating Pollution – 5 ways for protecting skin and hair

A conversation with  
Jean-François Molina, Marketing Director, Solabia Group



Jean-François Molina

**EURO COSMETICS:** Your Cosmetics Division has been developing manufacturing and marketing cosmetic active ingredients for finished product brands for more than 40 years. To meet the different needs of a constantly evolving market you offer a varied range of ingredients with high Innovation potential. Please describe.

**Jean-François Molina:** Facing with the multi-tasker brands and markets, our strategic approach has always been to combine Nature to Technology in order to get innovative and natural or natural-derived active ingredients dealing with most of the cosmetic applications. Technologies are at the cutting-edge of our know-how and gather Biotechnologies (Fermentation & Enzymatic Biocatalysis), Fine Green Chemistry, Vegetable and Marine Extraction (from conventional to eco-sustainable developments), without forgetting our specific activity related to the macro-encapsulation to obtain 3 Dimensions beauty pearls.

**EURO COSMETICS:** Protecting the skin from pollution has become essential, and con-

sumers are expecting specific products to be developed. You have dealt with pollution in five complementary steps: prevention, defense, fortification, stimulation, and repair. Please explain more detailed.

**Jean-François Molina:** I remember that some years ago, let's say about 5 to 6 years, we already pointed out the need to protect us from pollution and the market wasn't ready yet. Since evidence and publications, taken up by the media and then raised awareness of consumers, fighting against pollution is becoming part of the constant actions we should bring to each cosmetic product. There is unfortunately no possibility to see it decreasing although the common ecological consciousness and the Worldwide Health Authorities daily warns against this plague of our modern society. The quest for well-being and happy-looking starts by combating pollution!



Pollustop®, the anti-pollution shield



Ouessant Island, harvesting area of *Ascophyllum nodosum*

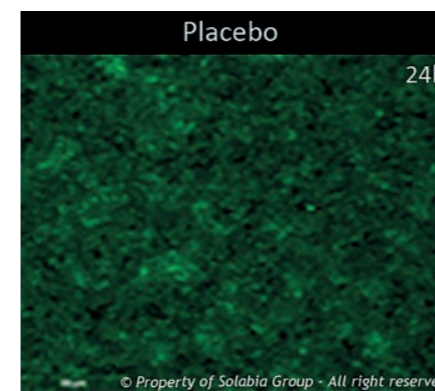
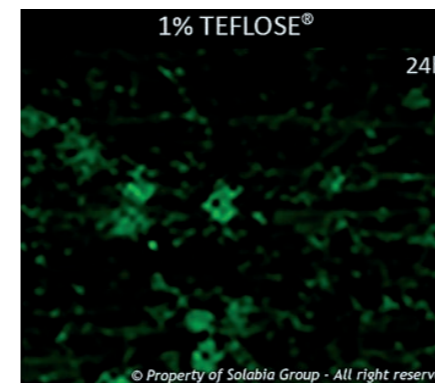
Dealing with pollution requires first to define what should we consider a pollutant. The exposure to UVs and other wavelengths has been pointed out the first, a long time ago, without necessarily speaking about pollution. Then, these recent years came the atmospheric pollution, such as the carbon particles, more particularly the fines particles of 2.5µm or 1µm. Don't forget the harmful effect of heavy metals. Some domestic compounds could also be part of the list as we are also distinguishing the outdoor and the indoor pollution. Undesirable bacteria and those forming biofilms can be also considered as pollutant as well, damaging the skin integrity and the microbiota ...

This being said, let's review shortly some of the Solabia's anti-pollution solutions:

– **Pollustop®**: a biotechnological branched and high molecular weight polysaccharide (Non GMO) acting as a global shield against UV, atmospheric PM2.5, PM 1 and domestic aggressions. An *in vivo* study has been carried out into a high polluted European city. It showed that this shield avoids by more than 95% the penetration of heavy metal into the skin versus placebo! In Beijing, volunteers experimented the protective effect of **Pollustop®** and the great majority of them really felt the sensation of having a protective second-skin shield

with soothing and moisturizing properties. Its remarkable multi-protection capacity makes it the first external skin and hair barrier against pollution.

– **Teflose®**: a biotechnological rhamnose-rich polysaccharide (non GMO) acting as an anti-bacterial adhesion shield with



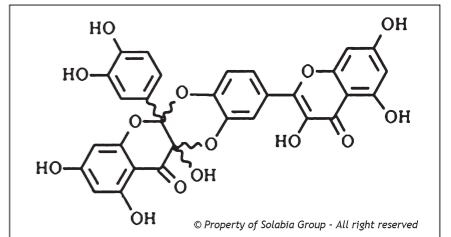
Inhibition of the formation of *P. acnes* biofilm

soothing properties; it inhibits the formation of cutaneous biofilms (i.e. from *Propionibacterium acnes*, *Staphylococcus aureus*), and decreases the bacterial virulence (new and unique demonstration done in the cosmetic field). **Microbiota-friendly**, this glycan owns its efficacy to its richness in rhamnose, known to have a specific affinity for keratinocytes receptors and by away, saturates the fixation site of bacteria on skin.

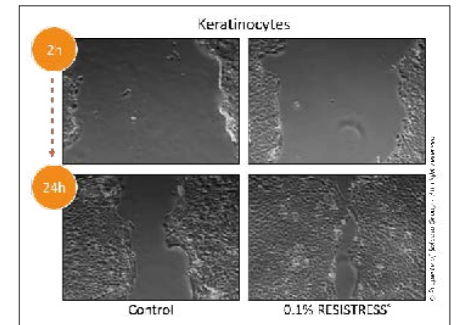
– **Resistress®**: Dedicated to decrease the **Oxid'aging®** cellular process, this extract of *Sophora japonica* flowers enriched in quercetin dimers by enzymatic bioconversion, presents the characteristics to globally enhance the natural antioxidant capacity of the skin. It prevents and repairs related skin damages, through the stimulation of the synthesis of antioxidant enzymes (catalase, superoxide dismutase), the improvement of the skin resistance to UV aggression, the decrease of lipidic peroxidation and the activation of both keratinocytes and fibroblasts proliferation ...

– **Invincity®**: Purified fucoidans (polysaccharides from *Ascophyllum nodosum*), it is sourced in Ouessant Island, a unique biotope classified at the Unesco Patrimony. Its innovative mechanism of action comes from the inactivation by 73% of the AhR (Aryl-hydrocarbon Receptor) pathway. Major biological transcriptor factor involved in pollution, it is causing inflammation, impaired cell renewal and melanogenesis activation. A repairing marine active ingredient to fight against **Polluaging®**.

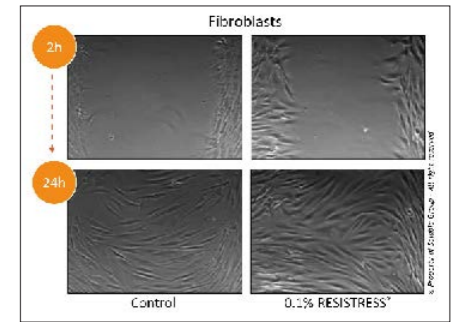
– **Detoxi-look®**: a vegetable complex of two yellow and luminous flowers, the Daisy (*Bellis perennis*) and the Everlasting (*Helichrysum italicum*) to recover a “happy skin for a happy look” after pollution exposure. This radiant detoxifier is activating the N°1 system of cellular detoxification thanks to its properties to strongly stimulate specific enzymes, the Cytochrome P450 and the UGT (UDP-glucuronyl Transferases), while illuminating the complexion and moisturizing the skin to make the light better reflected.



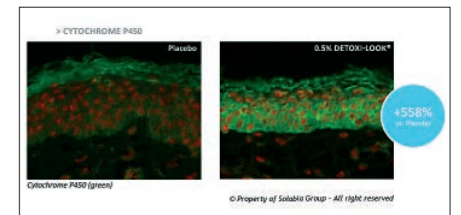
Quercetin dimer structure



Stimulation of Keratinocytes proliferation



Stimulation of fibroblasts proliferation

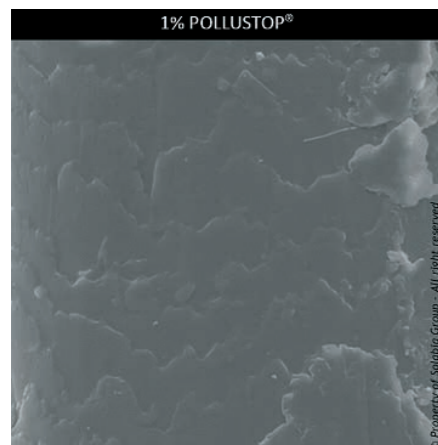
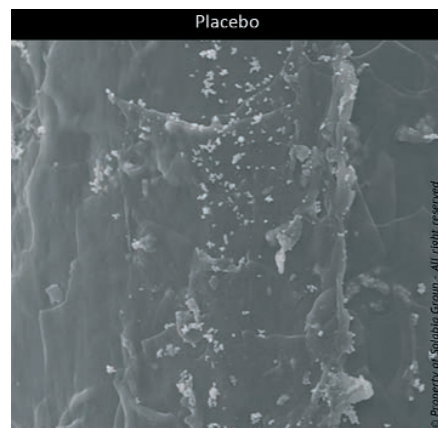


Stimulation of cytochrome P450

**EURO COSMETICS:** Our hair also needs protection from the incrustation of fine particles. What solution do you offer here?

**Jean-François Molina:** Hair is obviously exposed to pollution and it is not spared at all. Hair represent indeed a large surface in daily exchange with pollutants and is submitted to a constant oxidation stress causing the peroxidation of its lipids. Moreover, its surface is very often affected by combing, brushing and intensive washing with

inappropriate products removing also lipid cement. The combination of all these aggressions are impacting its cuticle whose scales are opening, favoring the adhesion of pollutants, in particular Particle Matters. Hair is less shiny and present a rougher surface. Thanks to its high molecular weight, **Pollustop®** demonstrated some significant benefits on one hand, through the hair protection from PM1 $\mu$  encrustation (application of a formula with **Pollustop®** at 1% before the addition of pollutants) and, on the other hand, through a cleansing action against PM1 $\mu$  (Application of pollutants and then treatment of hair locks by a shampoo formulated with **Pollustop®** at 0.5%).



Visualization of PM1 $\mu$  encrustation after rinsing

**EURO COSMETICS:** *Jean-Francois, can you describe us another way to act against pollution?*

**Jean-François Molina:** There is a way which seems not to be directly linked to the fight against pollution while it is part of the

major cosmetic gesture we should apply to the skin: reinforcing the skin barrier function. If you want to limit the penetration of pollutants into the skin, won't it be the fundamental action to carry out? That refers to the need to consolidate the cellular cohesion by stimulating the epidermis differentiation. Such activity can be reached for example thanks to the well-known properties of PCA (Pyrrolidone Carboxylic Acid) and its salts or esters. The incorporation of functionalized ceramide like our **Omega 6 Ceramide®** obtained from Safflower seed oil's linoleic acid combined to enzymatic biocatalysis is another option allowing the cutaneous lipid cement restructuring. Obviously we are coming back to the famous wall brick and mortar model ... Like a house, skin has its security systems and among them, its skin barrier function ... But if you let the door of the house open, or "the door of the skin" open – I mean, "if you are not taking care of the skin barrier function, any invaders or aggressors could enter" ...

**EURO COSMETICS:** *At the PCHI last year in Guangzhou you received an Award in the anti-aging category with your product D-Glycargine®. Tell us more about it and how were the customer reactions?*

**Jean-François Molina:** **D-Glycargine®** has indeed a great story in Solabia. This Arginine PCA molecule was mainly used for its anti-oxidant properties associated to the PCA. Our researchers decided to look for its capacity to protect the skin against the glycation and more than this, to demonstrate its ability to deglycate! Then as the glycation is accompanied by skin color change, in particular its "yellowing", and by loss of firmness, our R&D carried out two *in vivo* tests and it worked, leading us to receive in 2017 an Award at PCHI! The results showed a "de-yellowing" effect as well as a regular recovery of skin firmness. Asian customers weren't so aware about glycation and skin consequences but they understood that such anarchical biological process is also responsible for color irregularities and skin imperfection affecting not only the radiance complexion but speeding up aging too.

**EURO COSMETICS:** *What can we do to protect our skin optimally against the daily environmental influences?*

**Jean-François Molina:** Avoiding repeated sun exposure is the first tip I would recommend even if we all like to be sun-tanned. But by using the right sunscreen cosmetic products, you can reach safely the same results, without damages. Reducing our time spent in front of the digital tools will soften the blue light effects on skin, in particular the dark spot appearance.

Related to the atmospheric pollution, the entire world needs to change its habits, reduce driving for few meters ... Public Authorities are well aware of that and start to take some measures to limit the number of cars in big cities; but there is still a lot of progress to do. Washing the skin to remove its impurity, of course, but it has to be done gently without affecting the skin barrier, its integrity and microbiota. Using mild and soft formula is absolutely necessary. In Asia, where people are daily suffering from pollution, they are wearing mask and special clothes to minimize the risks. For sure, these protections will be customized and extended to our countries too ...

Fighting against pollution and protecting oneself is definitively a real challenge for innovation, for the cosmetic industry but also for so many other sectors of activity. It is the Top priority of the coming years and we all need to contribute by regularly developing new solutions while decreasing the pollutant emission and developing Eco-sustainable industrial technologies.

**EURO COSMETICS:** *Thank you for the conversation.* ■