

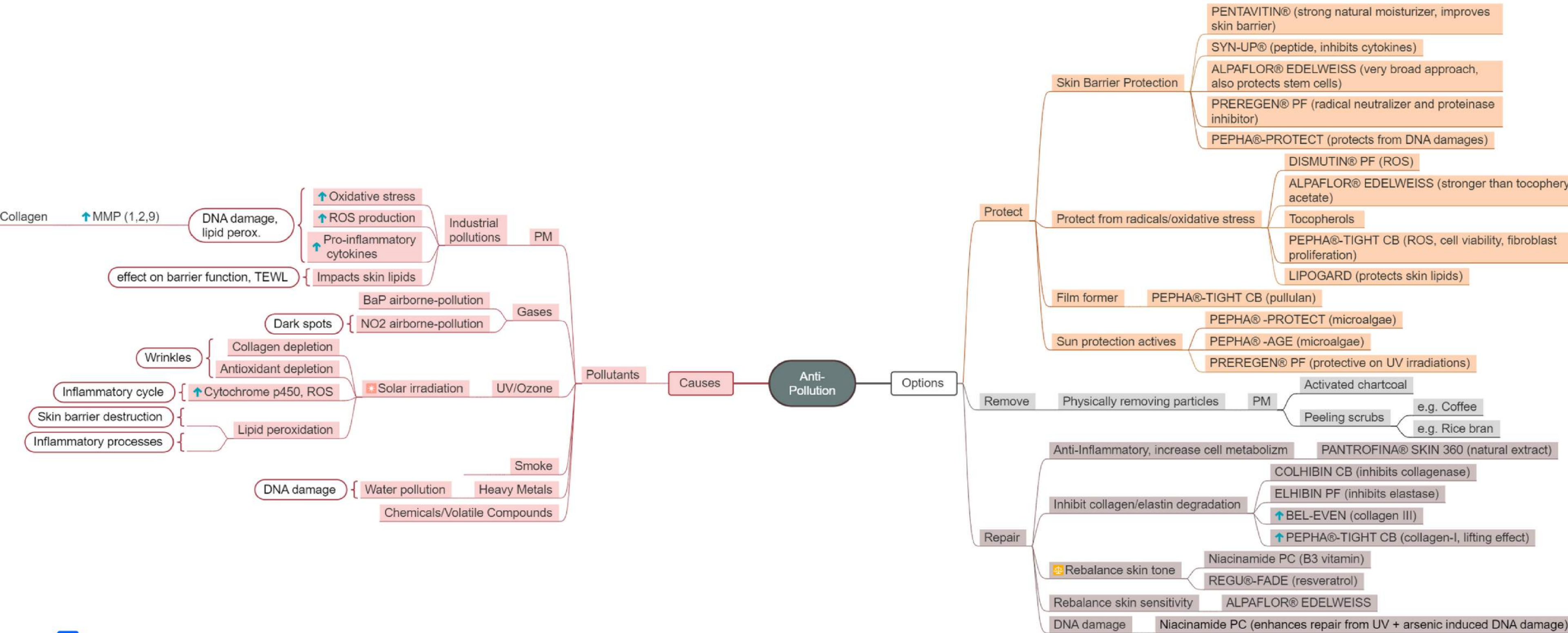
# ANTI- POLLUTION



**Sellcare**  
creative chemicals



# OVERVIEW



# PROTECTION



## ..by improving skin barrier & hydration

Appearance: Skin may appear flaky and dry

The skin's natural barrier function is weakened by the described pollutants (PM, organic compounds). Further causing a TEWL reduction, which also means dry skin. Dry skin allows pollutants to penetrate deeper. It is substantial to keep the skin well moisturised and the skin barrier intact. We suggest our best moisturiser, PENTAVITIN® (extensive data incl. 3D colour hydration mapping), which has strong immediate but also long-term effects. It is an all-natural polysaccharide that locks the moisture into the skin. Further, skin-identical ceramides can be added for missing lipids.



## ..by preventing degradation of collagen & elastin

Appearance: Wrinkles and fine lines

Pollutants can induce oxidative stress, which results in ROS production (Krutmann et al, 2014). We recommend the strong antioxidants DISMUTIN® PF and DSM Tocopherols (studies regarding stability vs. bioavailability available) to counteract the ROS. The peptides ELHIBIN® PF and COLHIBIN® CB (Hydrolyzed Rice Protein) inhibit the enzymes elastase and collagenase, respectively, and therefore delay ageing processes. Besides peptides, an algae-active, PEPHA®-TIGHT CB, shows strong in vivo efficacy in smoothing skin texture, making it firmer, more elastic, and reducing wrinkles.



## ..from solar irradiation

There is reason to believe that UV light might increase the negative effects of airborne particles on human skin (Krutmann et al., 2014). As a result, we recommend the use of antioxidants such as PEPHA®-AGE CB and Niacinamide PC. The vitamin Niacinamide PC tackles UV-induced DNA damage, rebalances uneven skin tone, and has a protective effect (cell viability) in the presence of particulate matter. The microalgae PEPHA®-AGE CB reduces the number of sunburn cells after UV exposure and helps fibroblasts regenerate after UVA exposure.

# REPAIR & REMOVAL



## REPAIR

### ..by rebalancing skin sensitivity

Appearance/Skin Feel: Skin can feel weak and sensitive

Focusing on the skin barrier and skin sensitivity, we recommend using the peptide SYN®-UP, which keeps the epidermal junction, desquamation, and skin sensitivity in check (reducing sensitivity marker CXCL5). Sensitive, irritated skin can be perceived as burning, stinging, dry, and itchy, among others. By rebalancing GABA<sub>B</sub> receptors, ALPAFLOR® SCUTELLARIA CB relieves urban stress and improves skin comfort. GABA<sub>B</sub> receptor activation has anti-inflammatory effects, inhibits chemokines, and relieves pain sensation (DSM, 2020). ALPAFLOR® EDELWEISS CB strengthens the epidermal barrier and reduces skin sensitivity by stimulating epidermal protection genes and proteins, as well as stratum corneum cohesion (Mistry 2017).



### ..by reducing dark spots

Appearance: Uneven skin tone

Pollution affects melanin synthesis pathways, which can result in dark spots, an uneven skin tone, and signs of ageing. PEPHA®-AGE CB (derived from microalgae) shows to reduce immediate skin hyperpigmentation caused by blue light, which we are exposed to every day. The level of NO<sub>2</sub> from traffic and PM is believed to be connected to dark spot formation as well (Mistry 2017). It would therefore be interesting to test if the positive effect of PEPHA®-AGE CB can be transferred to NO<sub>2</sub>/PM induced hyperpigmentation..



### ...by reducing inflammation

Appearance: Skin redness and sensitivity

Mistry (2017) suggests reducing proinflammatory cytokines that lead to redness and skin ageing.

We believe it's best to get to the root of the problem. We recommend strengthening the skin's resistance with the peptide SYN®-UP. It inhibits two key enzymes (plasmin, urokinase) involved in the stress cascade in the epidermis. Uninhibited, these increase the formation of MMP-9, leading to increased cytokine production and desquamation. This DSM discovery was awarded the Society of Cosmetic Scientists (SCS) Publication Award.



## Remove pollutants from skin

Appearance: Dull & oily skin

The large surface of activated charcoal helps to bind pollution toxins and remove them from the skin. Commonly used are also kaolin and scrubs like coffee beans or rice bran, which can be used in cleansers, masks, or exfoliators. Apparently, PEG-20 Glyceryl Triisostearate has the right hydrophilic-lipophilic balance (HLB ~8) to effectively remove PM from skin and is mild (Mistry, 2017).

# References

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