

PERSONAL CARE



TNO innovation
for life

The personal care industry continuously faces challenges in health claim substantiation, product innovation and product safety. Microbiology & Systems Biology (MSB) develops and delivers tools and technologies to help the cosmetics industry overcome these challenges.

Many companies in personal care promote their products by promising customers beneficial effects on skin health. The regulatory authorities demand that such claims are supported by scientific data. MSB offers a variety of skin models and technologies including genomics, transcriptomics, proteomics and metabolomics to measure and predict effects of personal care products on skin health. We can measure the effect of your products on biological processes that are fundamental to skin health including skin tissue, immune system and skin residing micro-organisms referred as the skin microbiome. In collaboration with other TNO expertise groups we offer:

-Skin microbiome analysis, for example in response to cosmetics.

-Skin tissue analysis, such as barrier function, pH, redness, skin microbiopsies.

-Immune system status analysis, such as de-

tection of cytokines in the skin, histology for immune system markers and analysis of systemic inflammation.

HEALTH CLAIM SUBSTANTIATION

We developed a method to use the skin microbiome as a tool to measure health-promoting activity of cosmetics, which may be useful for health-claim substantiation and product innovation. The skin microbiome consists of many different micro-organisms. For example, an estimated 1000 species of bacteria reside on the skin. The majority of skin microbiome is harmless or even beneficial to the host. Beneficial bacteria are important for skin health by preventing harmful micro-organisms in establishing skin diseases such as atopic dermatitis, rosacea, psoriasis and acne. Thus, the composition of the skin microbiome is important for maintenance of skin health.

We were asked to investigate whether skin microbiome composition can be used as a marker for skin health. We analyzed the skin mi-



icrobiome composition of human volunteers by genomic technologies. This information was used to identify skin microbiome markers associated with skin health. Such skin microbiome markers can be used as a tool to rapidly screen candidate cosmetic ingredients for beneficial activity on the skin microbiome.

PRODUCT INNOVATION

The consumer is increasingly demanding use of natural ingredients in food products and personal care products. Many chemically synthesized ingredients in personal care products are additives and preservatives known as E-numbers. E-numbers are receiving a lot of negative attention as the public perceives them as potentially harmful. Thus, there is interest from the personal care industry to find natural alternatives of E-numbers.

We were asked to develop a method to find alternatives for sorbate (E200-203), a commonly used preservative. Sorbate reduces product spoilage by inhibiting specific microorganisms. We analyzed the effect of sorbate on gene expression in spoilage microorganisms and successfully identified highly specific sorbate-responsive markers. Alternatives for sorbate can be found by screening natural ingredients for sorbate-like activity.



MSB helps the personal care industry in facing challenges in health-claim substantiation, product innovation and product safety.

This strategy may also be used to find alternatives for other E-numbers used in cosmetics such as parabens. Finally, we run multiple programs on identification of natural ingredients with antimicrobial activities which may be used for cosmetic applications.

PRODUCT SAFETY

Assessing the safety of ingredients in personal care products requires an alternative testing strategy, using new procedures in addition to currently used test methods that comply with the most recent regulatory guidance documents. In close collaboration with TNO Triskelion and other TNO expertise groups we offer you the latest innovative technologies focusing on new models that are better able to predict the human situation and are in line with the principle of the 3R's and the EU Seventh Amendment to the Cosmetics Directive. Visit ww.triskelion.nl for more information.

OUR EXPERTISE

- Advanced and broad technology toolbox.
- Many models of skin health and disease
- International client portfolio: we work with clients in the top10 personal care industry.

TNO.NL



MICROBIOLOGY & SYSTEMS BIOLOGY
MSB is part of TNO, one of Europe's largest technology and service provider.

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