New test strategy for mixtures

26 European institutions, including the BfR, have developed a strategy to investigate and assess the health risks of mixtures of multiple chemicals in an EU-funded research project. In addition to pesticides, the focus was on contaminants and potentially harmful ingredients in food. At the successful conclusion of EuroMix in May 2019, the BfR showed that animal experiments for assessing the combined exposure to multiple chemicals can be reduced – by using a new strategy that combines various in-vitro tests. The BfR also analysed the legal basis and assessment approaches, and proposed recommendations for implementing the new testing strategy. Alternative test methods and harmonised procedures should further improve the risk assessment of combined exposure to multiple chemicals.

More information:
www.euromixproject.eu

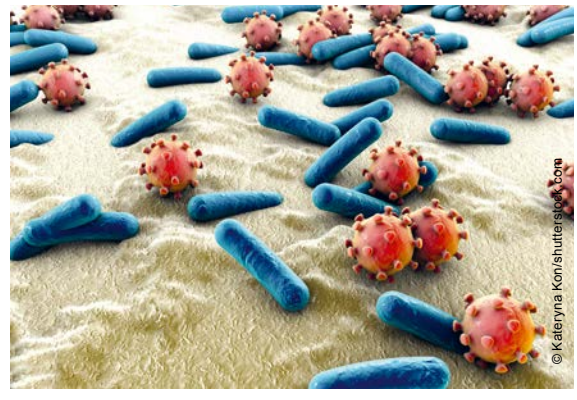
Rotter, S. et al. 2019. Overview on legislation and scientific approaches for risk assessment of combined exposure to multiple chemicals: the potential EuroMix contribution. Crit. Rev. Toxicol. 48: 796–814

Luckert, C. et al. 2018. Adverse outcome pathway-driven analysis of liver steatosis in vitro: a case study with cyproconazole. Chemical Research in Toxicology 31(8): 784–798

When microbes on the skin become toxic

Microbes on the skin influence the toxicity of substances with which people come into contact. This is confirmed by studies with a new co-culture system from the BfR. For the first time, the influence of the skin microbiome on toxic effects of substances on the skin can be analysed directly. Microbes live on all surfaces inside and outside the body and are not normally harmful. Their metabolic diversity is significantly greater than in humans and can lead to the toxification of foreign substances both in the intestines and on the skin, even from consumer-related products. Studies at the BfR have already shown this. Possible health risks from this have so far been inadequately assessed due to a lack of models. Even animal models are only suitable to a limited extent. Initial investigations with the 3D co-culture model developed at the BfR now show a clear influence of the microbiome on the condition, immunology and biology of the skin.

More information:
Tralau, T. et al. 2015. Insights on the human microbiome and its xenobiotic metabolism: what is known about its effects on human physiology? Expert Opin. Drug Metab. Toxicol. 11(3): 411– 425



Under the skin: metal from tattoo needles

Metallic micro- and nanoparticles from tattoo needles can accumulate under the skin and in the lymph nodes. This is the conclusion reached by the BfR and international partners. Tattoo needles are made of steel and therefore also contain nickel and chrome. The research team has determined that metal particles abrade from the needle during the tattooing process – if the tattoo ink contains the white pigment titanium dioxide. Nickel and chromium are released mechanically from the needle and enter the skin. The particles can then migrate into the lymph nodes. Up until now, it has been assumed that mainly colour pigments contaminated with nickel and chromium cause allergies. The study shows that tattoo needles may also pose a health risk. Future studies will investigate whether the additional absorption of nickel and chromium increases the probability of allergies.

More information:
Press release No. 33/2019 by the BfR dated 27 August 2019