

New generation of bioactive blockers

The characterisation of odour is a complex task and difficult to objectify even when the chemical composition of the gas is known. There are several reasons for that complex situation: the simultaneous semi-specific activation of many olfactory receptors, the poor knowledge of structure-activity relationships, the existence of synergistic or inhibitory effects in a mixture of chemicals.

One of the major challenge for a lot of industrial applications, is to understand what is behind a malodour, e.g. identification of the chemicals responsible for it, and find a way to limit its impact without adverse effects. A good way to fight malodours is by the use of neutralisers. But one should be disappointed by the neutralisers available on the market. Most of them do not demonstrate any efficiency and contain fragrances that may suggest more masking than real neutralising effect.

Together with our partner ChemCom, we develop a new approach for the identification and evaluation of efficient malodour blockers.

ChemCom is a company focused on human Olfactory Receptors (hORs). ChemCom developed a cellular platform allowing to deorphanize the receptors. It includes the establishment in vitro of an "olfactive nose" allowing the screening of a library of more than 7000 molecules that can be considered as potential activators or inhibitors of these hORs. As far as the main hOR activated by a malodorous compound are identified, ChemCom is able to search for antagonists in order to block the signal of activation. These blockers may be considered therefore as efficient neutralisers as they act directly on the activation mechanism of the perception.

However, the active blockers identified by that in vitro approach have still to be validated in vivo. Certech with its expertise in the field of odour has developed a method to present in a controlled way mixtures 'malodour - antagonist'. The validation of the neutralising effect is performed by an expert panel able to build complex sensory profiles. Panel members are asked to rate the intensity of the specific malodorous note with and without the presence of the antagonist. Typical demonstration of efficiency can be drawn as in figure 1. In this case, the unexpected earthy note is completely neutralized in the presence of the active neutraliser.

