



## A new concept for controlled and sustained release of fragrances, aromas and insecticides from water-soluble, storage stable, odourless pro-fragrances

During 2008-2009 YKI has focussed internal resources on development of a concept for controlled delivery and release of hydrophobic substances. The concept can be viewed upon as a pro-fragrance/pro-aroma /pro-drug/pro-insecticide etc concept, where a water soluble pro-molecule controllably and slowly breaks down to the desired compound which is thereby released.

Within the fragrance release area, we have demonstrated that sustained release of a given fragrance can be obtained from the solid material, and that the release rate can be varied between 20 and 100 days (half life of the pro-fragrance) by design of the material.

Also, water-triggered reversible (on/off) fragrance release have been demonstrated; the pro-molecules can be designed to start giving of the fragrance/active component upon contact with water, but to temporarily stop releasing the fragrance once the material dries out. Thereafter, the release could be initiated again, when water is added or humidity rises over a certain threshold.

A limitation in the concept is that the fragrance compound to be released must have a ketone functional group in its chemical structure. Furthermore, the pro-fragrance molecule itself may in many cases not be a registered, or at all known, compound today. However, the pro-fragrance itself will be non-volatile and odourless, which may be advantageous.

- A patent has been filed on the technology, covering several areas of use, including release of drugs, fragrances, aromas and insect repellents. The following has been demonstrated:
- Fragrance release with 20-100 days half life (continuous, from the dry material). Strategies for triggering the continuous release once and for all from a storage stable dry powder are also available.
- Water controlled fragrance-release; release in wet conditions only, reversible as described above. Perspiration-activated deodorant formulations are one exemplified application.
- The chemical structures of derivatives of 48 fragrance ketones, whereof many derivatives will be new molecules, are listed in the YKI patent application.
- Controlled release of drug molecules, including demonstrations in-vitro in blood at physiological conditions for a derivative of a commercial drug, and several listed derivatives of known molecules (125 derivatives) plus demonstration of that solubility of poorly soluble drugs can be increased up to ca 30 times

YKIs desire is now to sell or licence the technology to relevant partners.

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