

## Yield optimized fermentative production of pure (R)- $\alpha$ -lonone

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### Short description

The creation of new specific fragrance-compositions, aromas and the imitation of fragrances are simplified by the availability of pure scents. The isolation of pure scents out of plants is very expensive and results in only minor yield. Biotechnological processes for yield optimization are therefore essential on the long run. Phytowelt has now developed a process for the fermentative production of the chiral scent (R)- $\alpha$ -lonone and has applied for a patent for this process. It allows the production of pure raspberry- or violet-aroma without blending it with  $\beta$ - und  $\gamma$ -lonone. Furthermore a crucial important fact is that the wooden and musty background flavour, caused by the (S)-form of the  $\alpha$ -lonone, can be avoided. With this yield optimized fermentation process it is possible to conserve up to **20 hectares of agricultural area** per produced gram of (R)- $\alpha$ -lonone.

### The Innovation

What distinguishes our raspberry aroma from the established aromas is their naturalness and chirality. Solely the desired enantiomer, (R)- $\alpha$ -lonone, which is responsible for the raspberry fragrance, is produced by the biotechnological process. In this way, complicated process-related racemate splits are unnecessary, which has a positive effect on the production costs, the sustainability and the acceptance of the clients for product and process.

### Contribution to sustainability

Through the development of biotechnological processes optimized for yield, it is possible to save agricultural area. This reduces the CO<sub>2</sub> consumption caused by cultivating the fields and thus has a positive influence on the energy balance. Furthermore, the elimination of elaborate extraction processes, with low yield per gram (R) - $\alpha$ -lonone, reduces the amount of raspberries needed by **111 tons**. These are thus available for use as food. Therefore, the yield-optimized fermentative production of the (R) - $\alpha$ -lonone realizes an important contribution to sustainability.

### Examples for usage

(R)- $\alpha$ -lonone is used for perfume and cosmetics and as scent for raspberry- or violet-aroma. Furthermore it can be used for food and for child-designed medication, since it has a high degree of purity. For medication it is possible to acquire usage admission in an easier way, compared with volatile multicomponent-blends. Moreover the focused use of the pure aroma simplifies the composition of special fragrance scents.

**Phytowelt GreenTechnologies GmbH** is an internationally operating company with products and services in the fields of industrial and plant biotechnology. Our core competence since 1998 is the economical utilization of plant ingredients and their products (**phytomining**) as well as accelerated plant breeding without genetic engineering (**phytodiversity**). As a spin off from the Max-Planck-Institute for plant breeding the company success bases on our know-how and the enthusiasm of our team as well as our worldwide customer network.