

Conclusions

The results of this study show that the gap between detection and recognition of aliphatic aldehydes is odorant pair-dependent but – at the group level- spans at least a factor of 100.

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Detection and recognition of odorants

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Olfactory discrimination ability of human subjects as a function of stimulus concentration



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Background

Regarding the sense of smell, two different measures of sensitivity can be distinguished: a detection threshold, defined as the lowest concentration at which an odorant can be detected or discriminated from a blank stimulus, and a recognition threshold, defined as the lowest concentration at which an odorant can be assigned a recognizable quality or discriminated from another odorant.

The concentration span between detection threshold and recognition threshold and systematic evaluations of the impact of stimulus concentration on odorant recognition at the behavioral level have been poorly investigated.

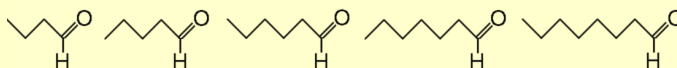


Aims

The aims of the present study were to determine olfactory detection thresholds for five members of a series of aliphatic aldehydes in a group of human subjects, and to test the discrimination ability for the same odorants when presented at different concentrations above their individual detection thresholds.

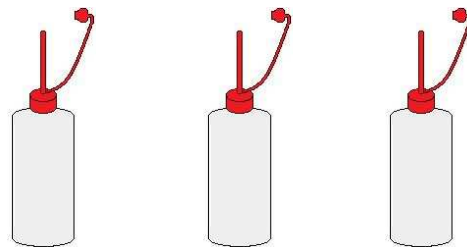
Material & Methods

5 Aliphatic aldehydes were used:
Butanal Pentanal Hexanal Heptanal Octanal



A triangular test procedure was used, three randomly arranged bottles were presented to the subjects.

In the discrimination task the aldehydes were presented at factors 3, 10, 30, 100, 300 and 1000 above the individual detection thresholds.



Results

Mean group detection thresholds were found to be ranging from 0.033 to 0.24 (see fig 1)

As a group, the subjects were able to significantly discriminate between some of the 10 odorant pairs above the individual detection thresholds (see fig 2).

Single individuals successfully discriminated between certain aldehyde pairs at factors less than 100.

Two of the aldehyde pairs were not discriminated above chance at any factor above the individual detection threshold.

