

CORRESPONDENCE

Thiamin Odor Compound Odor Threshold: Synthetic vs. "Natural"

Sir: We previously reported (Buttery et al., 1981) the determination of the odor threshold of a compound we had isolated from the UV irradiation of thiamin hydrochloride. This compound had been identified by spectral methods as 1-methylbicyclo[3.3.0]-2,4-dithia-8-oxaoctane (I) (Seifert et al., 1978). This identification was confirmed by the synthesis of I by another laboratory (Gygax, 1981).

Dr. Pickenhagen of Firmenich laboratories (Pickenhagen, 1982) recently reported to us that determination of the odor threshold of synthetic I in his laboratory gave a value approximately 10^4 times higher than the value we reported for the "natural" I isolated by UV irradiation of thiamin. Using a sample of synthetic I, generously supplied by the Firmenich group, we carried out a threshold determination in our laboratory and confirmed Dr. Pickenhagen's value for the synthetic I of 6 parts of compound/ 10^9 parts of water.

We then immediately repeated our threshold determination of the "natural" I, obtaining a value essentially the same as that we previously reported (Buttery et al., 1981) of 4 parts of "natural" I in 10^{13} parts of water.

It was apparent that there was some difference between the synthetic and "natural" I even though mass and NMR spectra and GLC retention data had shown them to be identical (Gygax, 1981). Our previous check of the purity of the packed column GLC isolated "natural" I had been carried out by capillary GLC using a metal capillary (300 m \times 0.75 mm i.d., stainless steel). Such metal capillaries are known to adsorb certain types of sulfur compounds.

The sample of "natural" I used for the odor threshold determination was reanalyzed by using a Pyrex capillary (150 m \times 0.64 mm i.d., Carbowax 20-M coated). This analysis showed a number of minor components besides I, the largest being of the order of 10% of I. We now suspect that the low threshold of the "natural" I is caused by one of these minor impurity peaks that must be the true "thiamin odor compound". This "impurity" must be an extraordinarily potent odorant as it would have an odor threshold many times lower than that found for the "natural" I. Work is in progress to determine the identity of this potent "impurity".

Literature Cited

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