

CHROM. 3545

Decomposition of melatonin in solution

The response to a recent note¹ concerning the chromatography of melatonin indicates wide spread interest in this compound. We have observed a decomposition of melatonin in ethanol solution (95 %) that appears to be of interest. This observation is particularly important in view of the difficulty encountered in trying to isolate this apparently stable compound from biological systems. Of added importance is the fact that this decomposition is not detectable by the current method of gas chromatography commonly used to analyze for this compound.

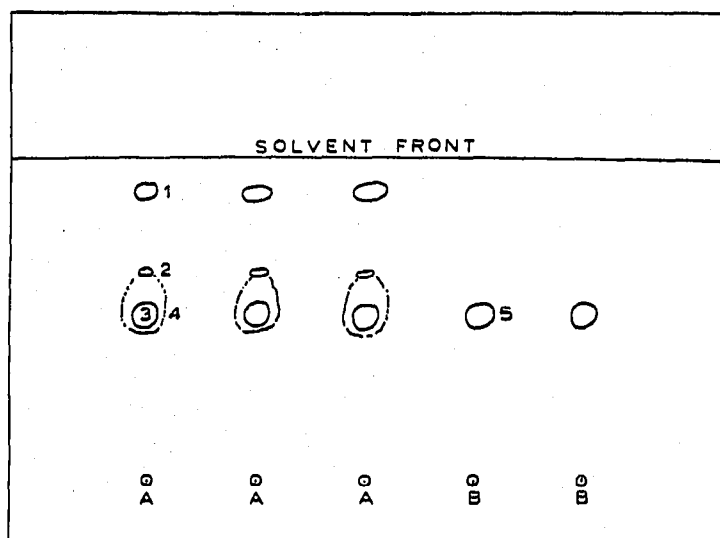


Fig. 1. Thin-layer separation of decomposed melatonin compared to fresh sample, on SiO_2 layers using CHCl_3 -MeOH (85:15). A = Initial spot of decomposed sample; B = initial spot of fresh sample; 1 and 2 = spots that are strongly fluorescent in U.V. light; 3 = spot that is pink with *p*-dimethylaminobenzaldehyde reagent; 4 = area that gave blue color on heating after spraying with *p*-dimethylaminobenzaldehyde reagent; 5 = blue spot given by fresh sample on heating with *p*-dimethylaminobenzaldehyde reagent.

Melatonin (Aldrich Chemical Co., Milwaukee, Wisc.) was dissolved in 95 % ethanol and allowed to stand for several days. The sample was analyzed periodically by gas chromatography as outlined in ref. 1. The sample gave only a single solute peak after standing for two weeks in solution with no apparent breakdown products being visible; however, thin-layer chromatographic separation of the mixture on SiO_2 layers using chloroform-methanol (85:15) indicated two additional components in the sample (see Fig. 1). Gas chromatography failed to indicate anything other than melatonin in the sample even after standing for several months.

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Received April 8th, 1968

J. Chromatog., 35 (1968) 572