

Note

An observation on the thermal behavior of cholesterol

DANIEL MUFSON, JOHN E. ZAREMBO, LOUIS J. RAVIN,
and KRISNA MEKSUWAN

Smith Kline & French Laboratories, 1500 Spring Garden Street, Philadelphia, Pa. 19101 (U. S. A.)

(Received April 24th, 1972)

We would like to bring to your attention that the presence of an endotherm at 37°C in anhydrous cholesterol, recently cited by Labowitz¹ has previously been reported by others^{2,3}, who employed DSC, NMR, dilatometry and X-ray spectroscopy to characterize the transition. In our laboratories we have observed by DTA (DuPont) that the 35-40°C endotherm is not present in hydrated cholesterol (obtained from freshly removed human gallstones) but can be generated as the hydrate loses water to become anhydrous (Fig. 1). Equilibration of the dehydrated species in an atmosphere

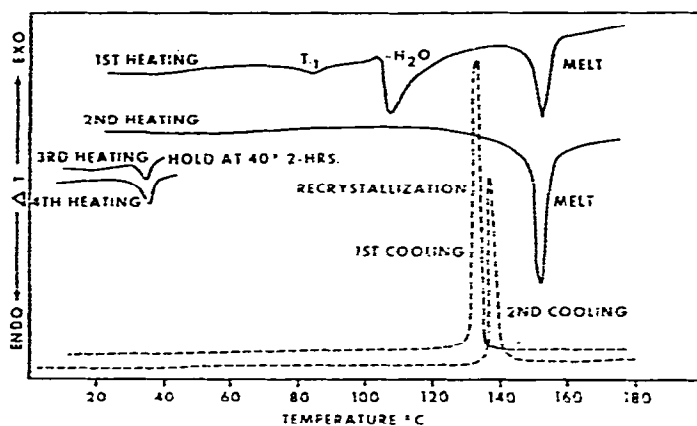


Fig. 1. The effect of drying on the thermal behavior of human gallstones.

saturated with water vapor will regenerate the hydrate with concomitant loss of the 37° endotherm. As cholesterol has been reported⁴ to exist as the hydrated species *in vivo*, the medical significance of this endotherm is unclear. Further studies, including measurement of solubility behavior in biological fluids of these two forms of cholesterol are in progress in our laboratories.

ACKNOWLEDGEMENT

We wish to thank Tomar Earnest, M.D. for the gift of the gallstones.

REFERENCES

- 1 L. C. Labowitz, *Thermochim. Acta*, 3 (1972) 419.
- 2 H. L. Spier and K. G. van Senden, *Steroids*, 6 (1965) 871.
- 3 K. van Puite, W. Skoda, and M. Petroni, *Chem. Phys. Lipids*, 2 (1968) 361.
- 4 H. Bogren and K. Larsson, *Biochim. Biophys. Acta*, 75 (1963) 65.