

Coprostanol in a sediment core from the anoxic

Tan-Shui estuary, Taiwan.

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Abstract

A short sediment core with a length of approximately 40 cm taken from the anoxic Tan-Shui estuary, Taiwan, was analysed for extractable and bound coprostanol (5 β -cholestan-3 β -ol), cholestanol (5 α -cholestan-3 β -ol) and cholesterol (cholest-5-en-3 β -ol). Extractable Σ coprostanol and cholestanol concentrations exhibit an abrupt change at a depth of about 20 cm, which supposedly marks the time when a sewage treatment plant became operational in the estuary in 1980. The Σ coprostanol/cholesterol and cholestanol/cholesterol ratios are comparatively higher in sediment than in the sewage effluent, implying some degree of diagenesis in the extractable phase. Anoxicity must have played a crucial role in the preservation and diagenesis of the sterols. In the upper layer (c. top 20 cm), the concentrations of extractable Σ coprostanol, normalized to total organic carbon (TOC), increase down the core. Extractable cholestanol exhibits the same trend, but extractable cholesterol shows the opposite trend. This indicates cholesterol reduction to these two stanols. In addition, both bound Σ coprostanol/TOC and cholestanol/TOC display a decreasing trend with core depth and no pronounced concentration change at 20 cm depth. The averages of percent bound sterols are in the following order: cholesterol > Σ coprostanol > cholestanol.