

Analytical Solutions

for BioTechnology

May 9, 2007 (Version 2.0)

BN 1505

Identification of Precipitates in Biological Tissue

Introduction

Analysis of precipitates/inclusions in biological tissue can be problematic when the analytical area is on the order of a few microns in size. For instance, dissection often fails to yield sufficient quantities for Liquid Chromatography – Mass Spectrometry (LC-MS) analysis. In contrast, direct analysis of cross-sectioned tissue specimens by Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS) is often possible owing to the ability of the technique to obtain complete mass spectra from regions only a few microns in size.

Discussion

In this study, a kidney precipitate cross-section was prepared by cryo-microtoming. The TOF-SIMS spectrum of the precipitate had an intense molecular ion at m/z 331, corresponding to the mass of the de-esterification metabolite of the prodrug Xemilofiban (Figure 1). The ion image in Figure 2 was generated using ten metabolite specific peaks including the molecular ion peak at m/z 331. Note the good correlation of the TOF-SIMS metabolite image with the optical image of the precipitate.

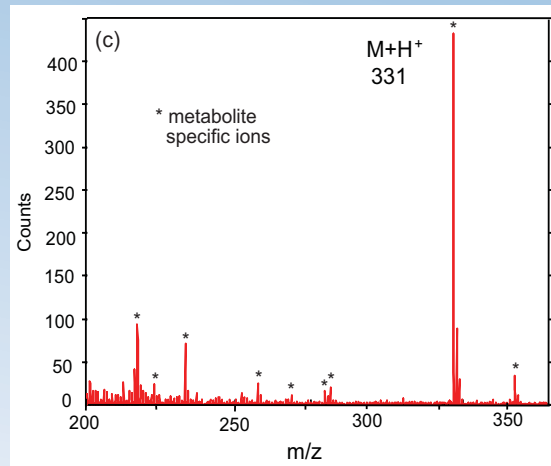
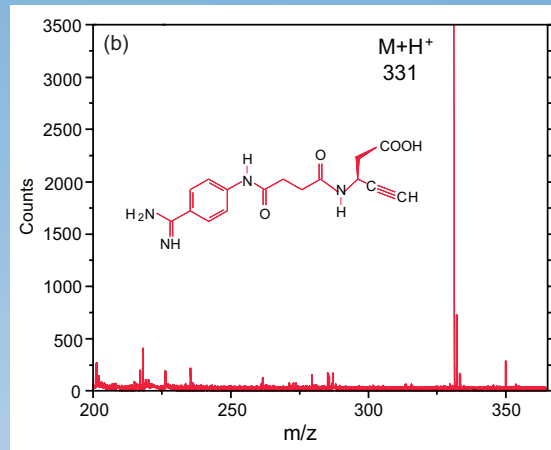
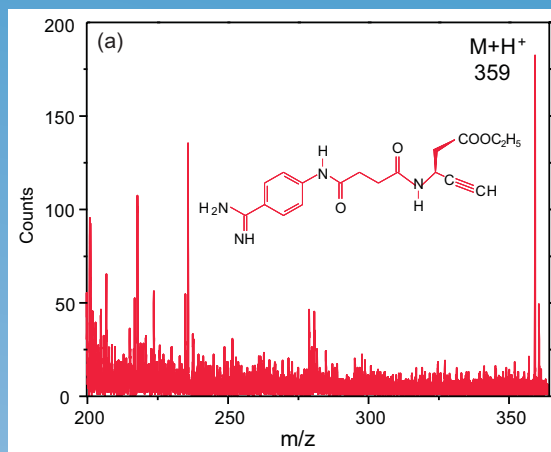


Figure 1. Positive ion TOF-SIMS spectra of (a) the prodrug Xemilofiban, (b) the de-esterification metabolite, and (c) the precipitate.

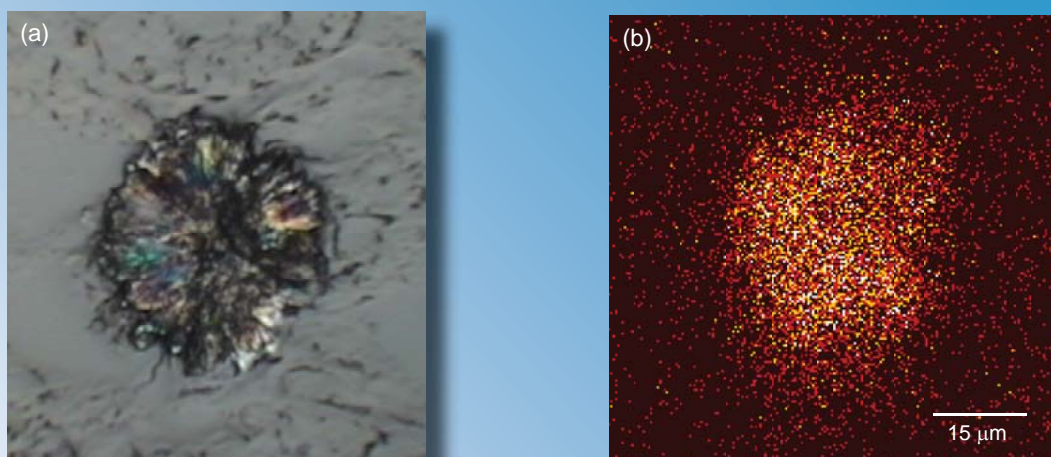
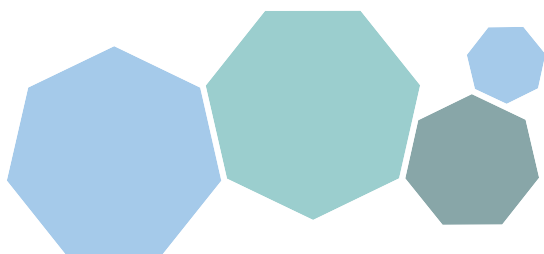


Figure 2. (a) Optical image of the cross-sectioned precipitate and (b) positive ion TOF-SIMS image of the precipitate using ten metabolite specific ions.



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