



## METHYLMALONIC ACID FROM SERUM OR PLASMA FOR GC/MS ANALYSIS USING: 500 mg CLEAN-UP<sup>®</sup> QAX EXTRACTION COLUMN

Part #: CUQAX15Z

### 1. PREPARE SAMPLE

Add 100  $\mu$ L of internal standard D<sub>3</sub>-MMA and 1 mL of acetonitrile to 1 mL of plasma or serum.  
Vortex for 20 sec.  
Centrifuge for 5 min at 2000 rpm.

### 2. CONDITION CLEAN UP<sup>®</sup> EXTRACTION COLUMN

1 x 3 mL CH<sub>3</sub>OH.  
1 x 3 mL D.I. H<sub>2</sub>O.

### 3. APPLY SAMPLE

Decant supernatant onto SPE column.

### 4. WASH COLUMN

1 x 10 mL of D.I. H<sub>2</sub>O.  
Dry with vacuum for 3 min.  
1 x 5 mL of CH<sub>3</sub>OH.  
Dry with vacuum for 3 min.  
1 x 2 mL of MTBE\*.  
Dry with vacuum for 3 min.

### 5. ELUTE METHYLMALONIC ACID

1 x 5 mL of 3% formic acid in MTBE, collect at 1 to 2 mL/min.

### 6. DRY ELUATE

Dry under a stream of nitrogen at < 35°C.

### 7. DERIVATIZE

Reconstitute with 25  $\mu$ L of MSTFA + 1% TMCS\*\* and 25  $\mu$ L ethyl acetate.  
Heat for 20 min at 60°C.

### 8. QUANTITATE

Inject 1 to 2  $\mu$ L onto gas chromatograph.

\* MTBE: methyl-tert-butyl ether

\*\* Part # SMSTFA-1-1, 10, 25,100

Compliments of  
Mark M. Kusmin and Gabor Kormaromy-Hiller ARUP LABORATORIES