〔J. Chromatogr., 515 , 391 (1990)〕

Determinaiton of Malonaldehyde in Oxidized Biological Materials by High-performance Liquid Chromatography.

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An HPCL method was used to determine the level of malonaldehyde (MA) in materiarials containing unsaturated fatty acids and rat liver microsomes peroxidized *in vitro*. The detection limit was 8.3 pmol for fatty acid samples and 25 pmol tor microsomal samples. In general, the MA values in oxidized materials obtained by the proposed HPLC method were lower than those obtained by the thiobarbituric acid method, although similar results were obtained with both methods for microsomal samples oxidized by NADPH. The effect of temperature on the HPLC results was investigated and it was found that the MA values obtained by derivatization at 25°C, followed by separation using HPLC, reflected the situation of the peroxidation more accurately.

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Determination of Free Malonaldehyde by Gas Chromatography with an Electron-capture Detector.

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A gas chromatographic procedure for the determination of free malonaldehyde (MA) is described using an electron-capture detector. MA solution was mixed with 0.1 M sodium dihydrogenphosphate and pentafluorophenylhydrazine (PFPH) solution (50 μg/ml) at room temperature for 60 min. Two drops of 9 M sulphuric acid, followed by n-hexane containing *p*-dibromobenzene as an internal standard were added to extract the resulting MA-PFPH. An aliguot of the hexane layer was injected onto the GC column. The procedure was applied to the determination of urinary MA. The response was linear in the range up to 2 μM. The relative standard deviation of replicate assays (n=8) was 4.31% for 1 μM sample solution.

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Free Malondialdehyde Levels in the Urine of Rats Intoxicated with Paraquat.

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We examined the excretion of free malondialdehyde (MDA) in the urine of rats to which a herbicide, Gramoxone, had been orally administered. The concentration of free MDA decreased following intake of Gramoxone. The total amount of free MDA increased temporarily, but then it decreased significantly to below normal values. Rats that died during this experimental period did not excrete any free MDA. In the surviving animals, MDA concentration in serum and lung microsomes decreased, while that in liver microsomes increased slightly after intake of the poison. Although the cause of decrease in urinary free MDA remains unclear, the marked changes may provide valuable information regarding a toxic mechanism of paraquat intake.