〔J. Chromatogr., **342**, 89 (1985)〕

Improved Direct Injection Method and Extractive Methylation Method for Determination of Valproic Acid in Serum by Gas Chromatography.

RYOTA NISHIOKA, MATSUMI TAKEUCHI, SATOSHI KAWAI*, MIKIO NAKAMURA, KAZUKO KONDO

A direct injection method: To the serum sample are added an acetonitrile solution including an internal standard and hydrochloric acid. After deproteinization, valproic acid in the supernatant is measured in the free form by direct injection into the GC. An extractive methylation method: To the serum sample are added an internal standard solution and a counter-ion solution, and the mixture is extracted into methylene chloride containing methyl iodide. Extraction and methylation reaction of valproic acid proceeds simultaneously. After centrifugation, an aliquot of the lower layer is injected into the GC. Both methods have been applied successfully to monitoring routine serum levels of valproic acid.

〔Rinsho Kagaku, **14**, 41 (1985)〕

Analysis of Valproate in Serum by Isotachophoresis. KAYOKO KOJIMA, TAKAO YAGI, KAZUKO KONDO, KENJI ITO, SATOSHI KAWAI*

A simple, rapid and sensitive method for the determination of valproate in serum by isotachophoresis has been established using an isotachophoretic migration tube consisting of a pre-separation tube(6cm x 1.0mm i.d.) and a separation capillary tube (15cm x 0.5mm i.d.). The leading electrolyte was hydrochloric acid(5mM) adjusted to pH 4.3 with 6-amino-n-caproic acid. To the leading electrolyte was added 0.1% hydroxypropylmethylcellulose to reduce electroendosmosis. 2-(N-morpholino)ethanesulphonic acid served as the terminating electrolyte. Valproate was separated without interference by such serum constituents as lactate and phosphate. Ten ml of serum was injected directly into the apparatus. The calibration curves for valproate in serum were found to be linear in a concentration range of 1-300 μg /ml.

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Reductases for Carbonyl Compounds in Human Liver. TOSHIHIRO NAKAYAMA, AKIRA HARA, KOJI YASHIRO, HIDEO SAWADA*

Two aldehyde reductases with Mr 78,000 and 32,000 and one carbonyl reductase with Mr 31,000 were purified to homogeneity from human liver cytosol. The high-Mr aldehyde reductase reduced various aldehydes, alicyclic ketones and α-diketones with NADH and NADPH as cofactor at an optimal pH of 6.0, and oxidized various alcohols with NAD at an optimal pH of 8.8. The identity of the enzyme with alcohol dehydrogenase was established by starch electrophoresis and co-purification of the two enzymes and by their structural similarities. The other enzymes were NADPH-dependent and monomeric reductases, but differed from one another in substrate specificity and inhibitor sensitivity. Comparison of kinetic constants for carbonyl compounds, tissue distribution of the three enzymes and variation of their specific activities in human livers were examined.