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t,t-Muconic Acid HPLC Analysis Kit

Since the solvents that are frequently exposed in the industry are generally organic/petroleum-based, their use has been controlled due to deformations due to their toxic effects and exposure limits have been determined. It is mostly biotransformed after exposure and is excreted through urine. Metabolites obtained by bioconversion are often used as biomarkers for solvent exposure.

Benzene found in petroleum derivatives and cigarette smoke has been classified as a potential carcinogen type I by the International Agency for Research on Cancer (IARC). The toxicological effect of benzene is non-lymphocytic leukemia, aplastic anemia, chromosomal aberration and progressive degeneration of the bone marrow. Benzene is excreted in the urine without being metabolized, as well as by being transformed into primary and secondary metabolites (benzene oxide, benzene dihydrodiol, phenol, benzoquinone, sphenylmercapturic acid (S-PMA), t, t-muconic acid and catechol) in urine. t, t-muconic acid and phenol benzene are known as urinary risk biomarkers of exposure.

Highlights of the Analysis Kit

- Simple sample preparation without SPE or evaporation
- 20.0 min. analysis time
- Isocratic elution
- Long life span of HPLC column

Parameters

t,t-Muconic acid

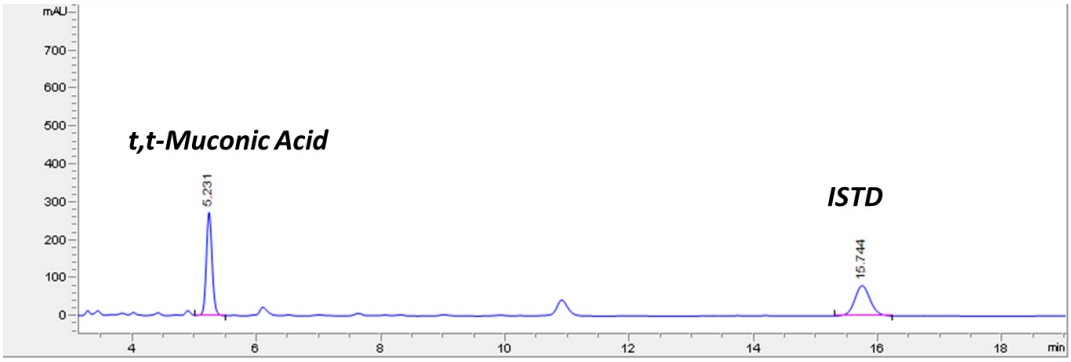
Sample Type

Urine

Sample Preparation

1	Take 400 µl diluted urine sample into HPLC vial
2	Add 100 µl Reagent-1 and vortex for 15 seconds
3	Centrifuge at 3500rpm 5 min.
4	Transfer the final solution into the insert of HPLC vials

Example Chromatogram



Example chromatogram of t,t-Muconic Acid

Method Performance

All results were obtained using Agilent DAD detector and 1200 series HPLC system

Analyte	LOQ (mg/L)	Linearity (mg/L)	Recovery		Repeatability			
					intra-day		inter-day	
			LLQC* (%)	HLQC** (%)	LLQC (%CV)	HLQC (%CV)	LLQC (%CV)	HLQC (%CV)
t,t-Muconic acid	0.03	0.1 – 50. 0	95	100	2.47	0.34	2.73	0.46

* LLQC: Low-level quality control
** HLQC: High-level quality control

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