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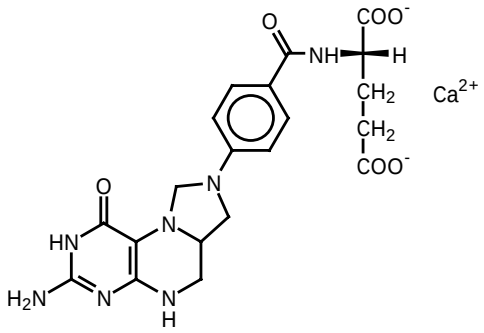
D A T A S H E E T

(6R,S)-5,10-Methylene-5,6,7,8-tetrahydrofolic acid, calcium salt

Abbreviation used: MethyleneFH$_4$

Product no. 16.226



$C_{20}H_{21}N_7O_6(Ca)$ MW: 495.5

Description	Yellow to brown crystalline powder		
Biochemistry	When methionine intake is low, levels of S-adenosylmethionine decrease. This stimulates the enzyme methylene tetrahydrofolate reductase (MTHFR) to convert 5,10-methylene tetrahydrofolate to 5-methyl-tetrahydrofolate, which is required for methionine synthesis.		
Solubility	MethyleneFH$_4$ calcium salt is very slightly soluble in water. The solubility of methyleneFH$_4$ is approx. 0.05 g per 100 g of water (22°C). The pH of 1 mg/ml solution is 6.6. Ultrasonication may be used to improve dissolution.		
Analytical methods	HPLC conditions:	column:	Waters Spherisorb S5-ODS1
		eluant:	10 mM Na_2HPO_4 pH 7 / Methanol (10%)
		flow rate:	1 ml/min
		wavelength:	254 nm
		solution:	1 mg/3 ml in 0.05 M NaOH
	TLC: MethyleneFH$_4$ solutions are too unstable to perform TLC.		
Specifications	Purity: HPLC	approximately 93%	
Stability	MethyleneFH$_4$ solutions are unstable in the presence of air. 1 mM solutions in water are degraded by about 5% within 60 minutes of preparation whereas 1 mM solutions in 0.01 M NaOH are only slightly degraded after 1 hour of preparation. The solutions are pH sensitive. Solutions of pH 8 or higher are more stable, than those of pH less than 8. So it is preferable to make solutions in evacuated, dilute NaOH, (0.05 M NaOH) and use them immediately. The powder is relatively stable in the presence of air. The powder is degraded by 4% stored open at room temperature for 1 month. MethyleneFH$_4$ is hygroscopic. Despite its instability in solution, the powder can be stored for several years, dry, in tightly closed vials at -20°C or colder.		
Storage	Keep the powder in ampoules at -20°C or colder. After an ampoule has been opened, the remainder should be stored in a tightly closed vial, in a freezer. MethyleneFH$_4$ in ampoules can be transported without the use of dry ice. Dry, in ampoules, it is stable for several weeks at room temperature.		
Uses	MethyleneFH$_4$ is an important standard for analytical work. It is sold for laboratory use only.		
Safety information	MethyleneFH$_4$ is known to be safe and there are no special precautions required in handling this product.		
References	5,10-Methylene-5,6,7,8-tetrahydrofolate. Conformation of the Tetrahydropyrazine and Imidazolidine Rings, Martin Poe et al., Biochemistry, 18 No. 24,(1979), 5527. Synthesis of (6R,11S)- and (6R,11R)-5,10-Methylene[11-1H,2H]tetrahydrofolate. Stereochemical Paths of Serine Hydroxymethyltransferase, 5,10-Methylenetetrahydrofolate Dehydrogenase, and Thymidylate Synthetase, Lawrence J. Slieker and Stephen J. Benkovic, Catalysis J. Am. Chem. Soc. 1061, (1984), 833.		

Further data sheets can be found on our website www.schircks.ch