

Free T₄ and Free T₃ by Dialysis and LC/MS-MS

A new generation—Free Thyroxine (FT₄) and Free Triiodothyronine (FT₃) assays that employ direct measurement through equilibrium dialysis and tandem mass spectrometry

Clinical Application

- Free thyroxine (FT₄) is the unbound portion of thyroxine (T₄) that is biologically active and commonly used along with TSH to assess thyroid function.^{1,2}
- Free triiodothyronine (FT₃) is the unbound portion of triiodothyronine (T₃) that is biologically active and used along with TSH and FT₄.¹
- Direct measurement of FT₃ and FT₄ by equilibrium dialysis, high-pressure liquid chromatography, and tandem mass spectrometry (ED-HPLC-MS/MS) provides enhanced accuracy over commonly used analog (automated) methods and is not affected by clinical conditions that impact protein-binding capacity^{1,3-6}
 - Eliminates use of indirect FT₄ or FT₃ analogs, indexes or calculations^{1,4}
 - Analog assays have been shown to mainly reflect total thyroid hormones rather than free thyroid hormones⁷
 - Achieves sensitivity for FT₄ to 0.2 ng/dL, and for FT₃ to 0.2 pg/mL
- The following clinical conditions are examples in which the FT₃ and FT₄ by dialysis and MS/MS methods may be useful:
 - Congenital absence of thyroxine-binding protein (TBG)²
 - Pregnancy^{2,8}
 - Administration of oral contraceptives or hormone therapy (for FT₄)⁹
 - Administration of atypical antipsychotic medications¹⁰
 - Malignancy or other critical illnesses¹¹

Scientific Expertise

- Industry-leading Endocrine Sciences laboratory with 30+ year history
- Extensive thyroid test menu and expertise
- Assay method developed, validated, and maintained on-site by PhD-level scientists
- Complete normative data for children, adults, and pregnant females
- PhD and MD consultation available

Superior Service

- Comprehensive services for the endocrinology specialist
- Broad network of managed care health plans
- Flexible connectivity options for test ordering and result reporting
- Patient service centers available nationwide
- Courier and logistics services
- Local sales representation



Specialized methodology—not affected by clinical conditions that impact protein-binding capacity



Free T₄ and Free T₃ by Dialysis and LC/MS-MS

	Free Thyroxine (FT ₄)	Free Triiodothyronine (FT ₃)		
Test Numbers	501902	503600		
CPT Code	84439	84481		
Method	Direct equilibrium dialysis, high-pressure liquid chromatography, and tandem mass spectrometry (ED-HPLC-MS/MS)			
LLOQ (sensitivity)	0.2 ng/dL	0.2 pg/mL		
Sample Requirement	1.0 mL serum (red-top) or EDTA plasma ship ambient (same day) or frozen.	1.0 mL serum or EDTA plasma ship ambient (same day) or frozen		
Performing Laboratory	Endocrine Sciences			
Reference Interval	Age	Range (ng/dL)	Age	Range (pg/mL)
	Premature (0-4w)	0.86-4.46	Premature (0-4 wk)	1.35-6.25
	Newborn (0-2w)	0.84-4.97	Newborn (0-2 wk)	0.99-8.03
	Newborn (2w-12m)	0.81-2.12	Newborn (2 wk to 12 mo)	1.59-6.15
	1-11 years	0.65-1.9	Prepubertal 1-10 y	2.21-4.99
	Pubertal Children and Adults	0.8-1.7	Children >10 y and adults	1.81-4.06
	Pregnant Females		Pregnant Females	
	First trimester (0-13.3 weeks)	0.65-1.4	First trimester	1.6-3.3
	Second trimester (13.4-26.6 weeks)	0.5-1.3	Second trimester	To be determined
	Third trimester (>26.6 weeks)	0.5-1.1	Third trimester	1.0-3.2

Esoterix Direct Accounts: Please use Esoterix test code for the following:

Free Thyroxine (FT₄) by Dialysis and LC/MS-MS 500329
 Free Triiodothyronine (FT₃) by Dialysis and LC/MS-MS 500336

References

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