

PF-PTD-290

Thiopurine Metabolites (6TGN / 6MMPN)

Synonyms	6-Thioguanine Nucleotides (6TGN), 6-Methylmercaptopurine Nucleotides (6MMPN)
Clinical Indication	The immunosuppressive effect of thiopurine drugs is mediated primarily by the cytotoxic metabolite, 6TGN, and incorporation of these false bases into DNA. Accumulation of high levels of 6TGN is also responsible for some side effects of thiopurine drugs, and has been associated with leucopenia. Furthermore, high levels of the inactive metabolite 6MMPN, which is formed via the TPMT pathway, may be associated with hepatotoxicity.
	Indications for measuring thiopurine metabolites include suspected non- compliance or treatment with a suboptimal dose or failure to respond to standard doses of thiopurine drugs. Measurement of 6MMPN helps to distinguish patients who are under-dosed or non-compliant (6MMPN levels appropriately low) from those demonstrating resistance to thiopurine drugs, i.e., preferentially metabolising thiopurine drugs to inactive 6MMPN rather than 6TGN (6MMPN disproportionately increased). In resistant patients, increasing the azathioprine dose is not helpful and further increases 6MMPN levels, predisposing to hepatotoxicity.
	6TGN and 6MMPN levels should be measured 4-6 weeks after start of thiopurine therapy and 4-6 weeks after any dose adjustment.
Part of Profile / See Also	
Request Form	Combined Pathology manual Blood form or ICE request
Availability / Frequency of	Referral test: Analysed by Biochemistry, Synnovis (9093), if specific criteria
Analysis	met.
Turnaround Time	2 weeks
Patient Preparation	
Sample Requirements	
Specimen Type	Whole blood (EDTA)
Volume	1ml
Container	Pink/purple top (EDTA) tube
	Or Paediatric pink top (EDTA) tube
Reference Range & Units	6TGN: 235 – 450 pmol 6TGN/8x10e8 cells Maximum drug efficacy in inflammatory bowel disease.
	6MMPN: >5700 pmol 6MMPN/8x10e8 cells Associated with increased risk of hepatotoxicity
Interferences	

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Interpretation & Clinical

Decision Value (if applicable)

References

Test code

Lab Handling

https://www.synnovis.co.uk/our-tests/thioguanine-nucleotides-tgn

6TGN

Do not centrifuge, separate or freeze. Store at 4°C as whole blood. FBC must be run locally before sending sample and the Red Blood Cell (RBC) result must be provided on the referral form.



Accredited to ISO 15189:2022