

## 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 Analysis

Referral test: Analysed by Biochemistry, Synnovis (9093), if specific criteria met.

### Turnaround Time

2 weeks

### Patient Preparation

### Sample Requirements

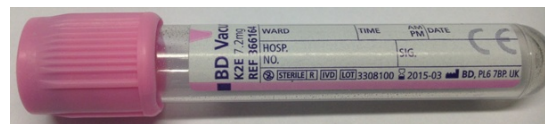
#### Specimen Type

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/8x10<sup>8</sup> cells  
 Maximum drug efficacy in inflammatory bowel disease.

**6MMPN:** >5700 pmol 6MMPN/8x10<sup>8</sup> cells  
 Associated with increased risk of hepatotoxicity

### Interferences

**Interpretation & Clinical**

**Decision Value (if applicable)**

**References**

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

**Test code**

6TGN

**Lab Handling**

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.**



9093  
Accredited to  
ISO 15189:2012