

# Neopterin

## *FOR USE AS A MARKER OF IMMUNE SYSTEM ACTIVATION*

### Test Highlights

- A sensitive biochemical marker of cell-mediated immunity
- Has been investigated for monitoring disease progression in HIV infection and rejection in allograft transplants

### Clinical Background

- Neopterin, a pteridine, is produced by macrophages after activation by interferon-gamma. Because interferon-gamma is released by active T-cells, neopterin is a sensitive marker of cell-mediated immune response.
- Neopterin release begins three days before T-cell proliferation and increased concentrations can be seen about one week before specific antibodies are measurable. Therefore, neopterin has clinical use as an early marker of inflammation.
- Increased concentrations of neopterin are seen in infectious diseases, both viral and bacterial, malignancies, autoimmune diseases, coronary artery disease, and allograft rejection.

### Indications for Ordering

At present, neopterin is primarily of research interest in HIV infection and allograft rejection.

### Interpretation

Reference interval for individuals age 18 years and older:  
4.0 – 16.8 nmol/L

### Limitations

- Non-specific marker of immune system activation.
- Cardiac and renal failure may lead to increased serum concentrations.

### Methodology

Competitive radioimmunoassay (RIA)

### References

1. Murr C, Widner B, Wirleitner B, Fuchs D. Neopterin as a marker of immune system activation. *Curr Drug Metab* 2002;3:175-87.
2. Berdowska A, Zwirski-Korczała K. Neopterin measurement in clinical diagnosis. *J Clin Pharm Ther* 2001;26:319-29.
3. Grebe SO, Mueller TF. Immune monitoring in organ transplantation using neopterin. *Curr Drug Metab* 2002;3:189-202.
4. Mildvan D, Spritzler J, et al. Serum neopterin, an immune activation marker, independently predicts disease progression in advanced HIV-1 infection. *Clin Infect Dis* 2005;40:853-8.
5. Fahey JL, Taylor JM, et al. The prognostic value of cellular and serologic markers in infection with human immunodeficiency virus type 1. *N Engl J Med* 1990;322:166-72.

## Test Information

**0098195**      **Neopterin Level**

For specific collection, transport, and testing information, refer to the ARUP Web site at [www.aruplab.com](http://www.aruplab.com).