

Synovial Fluid Analysis Chart

Patient information		
Name:		Date of birth:
Gender:		Date:
Referring physician:		
Appearance	Result	Remarks
Color	Colorless	
	Straw-like/yellow	
	Yellow	
	Yellow-green	
	Red/xanthochromic	
Clarity	Clear	
	Translucent	
	Opaque	
	Turbid	
	Bloody	
Viscosity	Increased (↑)	
	Decreased (↓)	
	Variable	
Chemical test	Result	Remarks
Glucose ratio (SF/serum)	>0.75 (Normal/noninflammatory)	
	<0.75 (inflammatory)	
Lactate dehydrogenase (LDH)	Normal	
	Low	
	Elevated	

Chemical test	Result	Remarks
Protein	Normal (<30 g/L) Elevated (>30 g/L)	
Microscopic examination	Result	Remarks
White blood cell count	<2 x 10 ⁹ (Noninflammatory) >2 x 10 ⁹ (Inflammatory)	
Red blood cell count	Normal Low Elevated	
Polymorphic nuclear cells	≤75% (Noninflammatory) >75% (Inflammatory/septic)	
Crystals	None Needle-like Rhomboid Other	
Gram stain	Positive Negative	
Culture	Positive Negative	

Interpretations				
Measure	Normal	Inflammatory	Septic	Haemarthrosis
Color	Colorless or straw-like/yellow	Yellow	Yellow/green	Red/xanthochromic
Clarity	Transparent	Translucent to opaque	Opaque/turbid	Bloody
Viscosity	Increased (↑)	Decreased (↓)	Decreased (↓)	Variable
WBC count	<2 x 10 ⁹ cells/L	2-50 x 10 ⁹ cells/L	>50 x 10 ⁹ cells/L (commonly >20 x 10 ⁹)	<10 x 10 ⁹ cells/L
% PMN (neutrophils)	≤25%	>75%	>75%	50-75%
Glucose ratio (SF/serum)	>0.75	>0.75	<0.50	>0.75
LDH	≤250 U/	≤250 U/	≤250 U/	≤250 U/
Protein	≤30 g/L	>30 g/	>30 g/L	≤30 g/L
Culture	Negative	Negative	Positive	Negative
Gram stain	Negative	Negative	Positive	Negative
Crystals	Negative	Needle-like (gout) or rhomboid (pseudogout)	Positive Negative	Negative

Note: Reference ranges and interpretation details may vary depending on the laboratory

Overall result

Additional notes

Seidman, A. J., & Limaiem, F. (2023). Synovial fluid analysis. In StatPearls. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK537114/>

Shmerling, R. H., Delbanco, T. L., Tosteson, A. N. A., & Trentham, D. E. (1990). Synovial fluid tests: What should be ordered? *JAMA*, 264(8), 1009–1014. <https://doi.org/10.1001/jama.1990.03450080095039>

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