



# Autoimmune Hepatitis

## Autoantibody Tests

**SMOOTH MUSCLE ANTIBODY REACTIVE WITH F-Actin WITH OR WITHOUT ANTI-NUCLEAR ANTIBODY AND ANTIBODY TO SOLUBLE LIVER ANTIGEN (SLA) ARE DIAGNOSTIC FOR TYPE 1 AUTOIMMUNE HEPATITIS.**

**Antibody to Liver Kidney Microsomal-1 (LKM-1) and Liver Cytosol-1 (LC-1) Antigens are diagnostic for Type 2 Autoimmune Hepatitis.**

### WHAT IS AUTOIMMUNE HEPATITIS?

- Autoimmune-mediated liver injury that should be distinguished from Viral Hepatitis.
- Female preponderance of 8:1.

### HOW COMMON IS AUTOIMMUNE HEPATITIS?

Uncommon (10-25/100,00). Early diagnosis is essential to prevent progression to end stage liver cirrhosis. Prognosis is excellent with immunosuppressive treatment.

### WHAT IS THE PATHOLOGY OF AUTOIMMUNE HEPATITIS?

Portal-lobular interface hepatitis.

### WHAT OTHER LABORATORY TESTS SUPPORT THE DIAGNOSIS?

- Elevated liver transaminases, serum IgG and ESR.
- Negative serological tests for viral hepatitis.

**Fig. 1 Classification of Smooth Muscle Antibody**

#### Smooth Muscle Antibody (SMA)

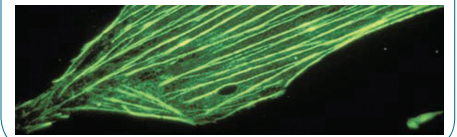
- SMA-T stains periTubular fibrils of kidney tubules and 'actin cables' in cultured cells
- SMA-V stains smooth muscle of blood vessels

SMA-T but not SMA-V is specific for F-Actin and a marker for Type 1 autoimmune hepatitis

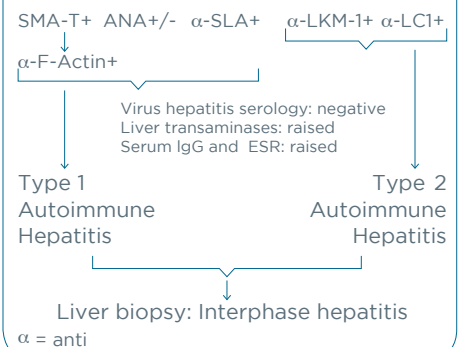
**Fig. 2 F-Actin is formed by polymerization of monomeric G-Actin**



**Fig. 3 SMA-T antibody reacts with 'actin cables' (6nm microfilament bundles)**



**Fig. 4 Diagnostic approach to autoimmune hepatitis**



### What is the sensitivity and specificity of the tests?

	Sensitivity	Specificity
SMA-T to F-Actin	80%	95%
LKM-1	90%	95%

Data not available for SLA and LC1

### CAVEATS

- Anti-actin antibody has been reported in coeliac disease and in healthy subjects.
- LKM-1 antibody has been reported with Hepatitis C infection.
- LKM-1 antibody should be distinguished from anti-mitochondria antibody that segregates with primary biliary cirrhosis.

### SPECIMEN REQUIREMENTS

#### Test Name:

Smooth Muscle Antibody (SMA), Anti-Nuclear Antibody (ANA), SLA Antibody, LKM-1 Antibody, LC-1 Antibody

#### Sample Type:

1 x Gel (SST) Tube (Gold Top)

#### Sample Transport:

Ambient temperature

#### Medicare Rebate:

Yes

#### Turnaround:

Tests run twice weekly

### REFERENCES

1. Mackay IR, Toh BH. Autoimmune Hepatitis: The Way We Were, The Way We Are Today and The Way We Hope To Be. *Autoimmunity*. 2002 Aug;35(5):293-305. Review.
2. Bogdanos DP, Invernizzi P, Mackay IR, Vergani D. Autoimmune Liver Serology: Current Diagnostic and Clinical Challenges. *World J Gastroenterol* 2008. Jun 7;14(21):3374-87. Review.
3. Toh, BH, Pollock W and Taylor R F-Actin-Reactive Smooth Muscle Antibody in Subjects With Normal Liver Function. *Pathology* 2009 (in press).

### ABOUT THE AUTHOR

*Prof. Ban-Hock Toh*

*MBBS, PhD, DSc, FRACP, FRCPA*

Professor Toh has been a Senior Consultant Immunologist for Healthscope Pathology since 1986, with national supervisory responsibility for Immunology. He holds a fractional Professorial appointment at the Centre for Inflammatory diseases at Monash University's Department of Medicine where he heads the Autoimmunity Research Laboratory. He is also an Honorary Professor at Monash Immunology and Stem Cell Laboratories and a Professorial Fellow at the Baker Heart Research Institute.

### ENQUIRIES

#### Specific testing procedures and results contact:

Healthscope Immunology Department.

**(03) 9538 6777**

#### Disease-related diagnostic queries:

*Prof. Ban-Hock Toh MBBS, PhD, DSc, FRACP, FRCPA* Immunopathologist, Healthscope Pathology.

**(03) 9538 6777**

*Providing services since 1936, Healthscope Pathology operates throughout Australia, New Zealand, Singapore and Malaysia.*

*Healthscope Pathology has purpose built, state-of-the-art service and molecular research laboratories which ensure the highest standard of testing.*

**focused on you**

[healthscopepathology.com.au](http://healthscopepathology.com.au)