# Vascular cell adhesion molecule-1 (VCAM-1): A new marker of disease activity in lupus nephritis

**Chesis**Submitted for partial fulfillment of Master Degree in
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## List of Abbreviations

ARA	The American Rheumatism Association
AKA	The American Kneumausm Association
ACKD	Advanced chronic kidney disease
ACR	American College of Rheumatology
ARB	Angiotensin receptor blockers
ACE	Angiotensin-converting enzyme
ALMS	Asperva Lupus Management Study
ANCA	Anti-neutrophil cytoplasmic antibodies
APS	Antiphospholipid antibody syndrome
BUN	Blood urea nitrogen
BILAG	British Isles Lupus Assessment Group
CXCL-16	Chemokine (C-X-C motif) ligand 16
С	Complement
cDNA	Complementary DNA
CBC	Complete Blood Count
CCL	Chemokine (C-C motif) ligand
CCR	CC chemokine receptors
CRP	C-reactive protein
CXCL	C-X-C motif chemokine
CYC	Cyclophosphamide
CsA	Cyclosporine
DNA	Deoxyribonucleic acid

### 🕏 List of Abbreviations 🗷

dsDNA	Double-stranded DNA
ELNT	Euro-Lupus Nephritis Trial
EM	Electron microscopy
ET-1	Endothelial-1
ESRD	End-stage renal disease
GFR	Glomerular filtration rate
HLA	Human leukocyte antigen
IF	Immunofluorescence
ICAM-1	Intercellular adhesion molecule-1
ICs	Immune complexes
IFN	Interferon
IL	Interleukin
ISKDC	International Study of Kidney Disease in
	Children
ISN	International Society of Nephrology
JAK	Janus kinase
KDOQI	Kidney Disease Outcomes Quality
	Initiative
KT	Kidney Transplantation
LDH	Lactate dehydrogenase
LM	Light microscopy
LN	Lupus nephritis

### 🕏 List of Abbreviations 🗷

Mycophenolate Mofetil Versus
Azathioprine for Maintenance Therapy of
Lupus Nephritis
Major histocompatibility complex
Mannose-binding lectin
Minimal Change nephritis
Monocyte chemoattractant protein
Mycophenolate mofetil
Murine lupus
Negative predictive value
National Institutes of Health
Per os
Positive predictive value
Negative predictive value
Renin–angiotensin–aldosterone system
Regulated upon Activation, Normal
T-cell Expressed, and Secreted
Ribonucleic acid
Renal Pathology Society
Renal replacement therapy
Standard deviation
Systemic lupus erythematosus

### 🕏 List of Abbreviations 🗷

SLEDAI	Systemic lupus erythematosus disease
	activity index
SLN	Silent Lupus Nephritis
STAT	Signal transducers and activators of
	transcription
TGF	Transforming growth factor
TLRs	Toll-like receptors
TMA	Thrombotic microangiopathy
TNF	Tumor necrosis factors
TNFR	Tumor necrosis factor receptor
VCAM-1	Vascular Adhesion Molecules-1
WHO	World Health Organization

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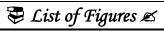


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#### Introduction

Lupus nephritis (LN) is a major complication of systemic lupus erythematosus (SLE) that aggravates both its morbidity and mortality. It is mediated by the glomerular deposition of immune complexes that promote a cascade of inflammatory events leading to severe tissue damage. Anti-dsDNA antibody deposition is an early event in lupus nephritis and is followed by local production of both cytokines and chemokines that trigger glomerular inflammation and ultimately drive the irreversible renal damage (*Perez et al.*, 2001).

A significant number of T cells and macrophages infiltrate the kidneys of patients with lupus nephritis. Chemotactic factors, especially monocyte chemoattractant factor-1 (MCP-1) and adhesion molecules such as intercellular adhesion molecule-1 (ICAM-1) cooperatively facilitate recruitment of mononuclear cells into inflamed tissues (*Kuroiwa and Lee*, 1998).

Adhesion molecules are a polymorphic family of proteins, produced by endothelial cells, lymphocytes, and polymorphonuclear cells, and includes vascular cell adhesion molecule-1 (VCAM-1), E-selectin, and intercellular adhesion molecule-1 (ICAM-1), among others; all of them play an important role in the activation of the inflammatory process and tissue damage (*Zaccagni et al.*, *2004*).