



شبكة المعلومات الجامعية  
التوثيق الإلكتروني والميكروفيلم

# بسم الله الرحمن الرحيم



**HANAA ALY**



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# شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



**HANAA ALY**



# **Relation between postmenopausal osteoporosis and IL-17 serum level**

*Thesis*

*Submitted in Partial Fulfillment of the Requirement of the Master Degree in Physical Medicine, Rheumatology and Rehabilitation*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# قَالَ

سَبَّحَانَكَ لَا إِلَهَ إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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*Samar Samy El-Hoseiny*

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## *List of Abbreviations*

Abb.	Full term
<b>AP1</b> .....	Activator protein 1
<b>APC</b> .....	Adenomatous polyposis coli
<b>AS</b> .....	Ankylosing spondylitis
<b>AUC</b> .....	Area under curve
<b>BAFF</b> .....	B cell activating factor
<b>BMD</b> .....	Bone mineral density
<b>BMDs</b> .....	Bone mineral densities
<b>bone ALP</b> .....	Bone alkaline phosphatase
<b>CaMK</b> .....	Calmodulin-dependent protein kinase
<b>CBP</b> .....	CREB binding protein
<b>CD4+</b> .....	Cluster of differentiation 4+
<b>CRD</b> .....	Cysteine rich domain
<b>CREB</b> .....	cAMP-response element-binding protein
<b>CTX</b> .....	C-telopeptides of type 1 collagen
<b>DC</b> .....	Dendritic cells
<b>Dkk</b> .....	Dickkopf
<b>DPA</b> .....	Dual photon absorptiometry
<b>DPD</b> .....	Deoxypyridinoline
<b>DXA</b> .....	Dual energy X-ray absorptiometry
<b>ELISA</b> .....	Enzyme-linked immunosorbent assay
<b>ERK</b> .....	Extracellular signal regulated kinase
<b>ESCEO</b> .....	European society for clinical and economic aspect of osteoporosis and osteoarthritis
<b>ETBF</b> .....	Enterotoxigenic Bacteroides fragilis
<b>FDA</b> .....	Food and drug administration
<b>FRAX</b> .....	Fracture risk assessment tool
<b>FZD</b> .....	Frizzled
<b>GSK3<math>\beta</math></b> .....	Glycogen synthase kinase 3 $\beta$
<b>H-MSCs</b> .....	Human mesenchymal stem cells
<b>IBD</b> .....	Inflammatory bowel disease



## *List of Abbreviations Cont...*

Abb.	Full term
<b>IFN-<math>\gamma</math></b> .....	Interferon- $\gamma$
<b>IKK</b> .....	I $\kappa$ B kinase
<b>IL-17</b> .....	Interleukin-17
<b>IL17Rs</b> .....	IL-17 receptors
<b>ILC3s</b> .....	3 innate lymphoid cells
<b>IOF</b> .....	International osteoporosis foundation
<b>IQR</b> .....	Interquartile Range
<b>JAK</b> .....	Janus kinase
<b>LEF1</b> .....	Lymphocyte enhancer factor 1
<b>LPS</b> .....	Lipopolysaccharide
<b>LRP5</b> .....	lipoprotein receptor related protein 5
<b>LRP5/6</b> .....	Low-density lipoprotein receptor-related protein 5/6
<b>MAPKs</b> .....	Mitogen activated protein kinase
<b>M-CSF</b> .....	Macrophage colony stimulating factor
<b>MHC</b> .....	Major histocompatibility complex
<b>MMPs</b> .....	Matrix metalloproteinases
<b>MSI</b> .....	Microsatellite instability
<b>MSS</b> .....	Microsatellite stable
<b>NF-<math>\kappa</math>B</b> .....	Nuclear factor $\kappa$ B
<b>NKT</b> .....	Natural killer T
<b>NTX</b> .....	N-telopeptides of type 1 collagen
<b>OC</b> .....	Osteocalcin
<b>OP</b> .....	Osteoporosis
<b>OPG</b> .....	Osteoprotegerin
<b>P13K</b> .....	Phosphoinositide 3-kinase
<b>P1NP</b> .....	Procollagen type 1 N-terminal propeptide
<b>PCP</b> .....	Planar cell polarity
<b>PKC</b> .....	Protein kinase C

## *List of Abbreviations Cont...*

Abb.	Full term
<b>PQCT</b> .....	Peripheral Quantitative Computed Tomography
<b>PTH</b> .....	Parathyroid hormone
<b>PTHrP</b> .....	parathyroid hormone-related protein
<b>PYR</b> .....	Pyridinoline
<b>QCT</b> .....	Quantitative Computed Tomography
<b>QUS</b> .....	Quantitative Ultrasound
<b>RA</b> .....	Rheumatoid arthritis
<b>RANK</b> .....	Receptor activator of NF- $\kappa$ B
<b>RANKL</b> .....	Receptor activator of NF- $\kappa$ B ligand
<b>RBP</b> s .....	RNA-binding proteins
<b>Ror</b> .....	Receptor tyrosine kinase like orphan receptor
<b>RORgt</b> .....	Related orphan receptor gamma
<b>SEFIR</b> .....	Similar expression of fibroblast growth factor genes and IL-17Rs
<b>SERMs</b> .....	Selective estrogen receptor modulators
<b>SOST</b> .....	Sclerostin
<b>SPA</b> .....	Single photon absorptiometry
<b>SXA</b> .....	Single-energy X-ray absorptiometry
<b>TCF</b> .....	T cell factor
<b>TCR</b> .....	T cell receptor
<b>TGF-<math>\beta</math></b> .....	Transforming growth factor- $\beta$
<b>Th17</b> .....	T helper 17
<b>TNF-<math>\alpha</math></b> .....	Tumor necrosis factor- $\alpha$
<b>TRAF6</b> .....	Tumor necrosis factor receptor associated factor 6
<b>USP25</b> .....	Ubiquitin-specific peptidase 25
<b>WHI</b> .....	Women's Health Initiative
<b>WHO</b> .....	World health organization
<b>WNT</b> .....	Wingless

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# Abstract

**Background:** Osteoporosis is a bone condition that makes bones thinner and more fragile because of reduced bone density and it puts people at risk of fractures, especially of the hip, spinal vertebrae and wrist.

**Aim and objectives:** The aim of work is to study possible relation between serum level of IL-17 and postmenopausal osteoporosis.

**Subjects and methods:** A case control study that was conducted at Physical Medicine, Rheumatology and Rehabilitation department at Ain Shams University hospital including thirty postmenopausal females' study will be diagnosed as having primary post-menopausal" type I". The duration of the study ranged from 6-12 months.

**Results:** results revealed that IL-17 level were 120 (60 – 280) with range (45-480), the mean DEXA Score level was  $1.03 \pm 0.27$  with range (0.62-1.7) and the median FRAX level was 0.55 (0.3 – 1.2) with range (0.1-1.9). There was high statistically significant difference between with and without osteoporosis groups regarding IL-17, DEXA Score and FRAX and there was no statistically significant difference as regard ESR, CRP and PTH.

**Conclusion:** Serum IL-17 was significantly elevated in osteoporotic postmenopausal women when compared to healthy postmenopausal women.

**Keywords:** Postmenopausal, Osteoporosis, IL-17, DEXA Score, Rehabilitation.