



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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MicroRNAs and Osteoarthritis in Equine

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Abstract: Osteoarthritis (OA) is one of the most degenerative joint diseases in both human and veterinary medicine. The objective of the present study is the early diagnosis of OA in donkeys using a reliable grading of the disease based on clinical, chemical and molecular alterations. OA was induced by intra-articular injection of 25 mg monoiodoacetate (MIA) as a single dose into the left radiocarpal joint of nine donkeys. Animals were clinically evaluated for 7 months. Blood, synovial fluid and cartilage samples were collected for assessment of total GAGs and chondroitin sulphate (CS) concentrations, matrix metalloproteinases (MMPs) activity, expression level of COL2A1 protein, miRNA-146b, miRNA-27b, TRAF-6 and COL10A1 genes, histopathological and immunohistochemical analysis of Caspase-3. Animals showed the highest lameness score one week post-induction with the progression of radiographical and ultrasonographic changes. Total GAGs and CS levels were gradually increased in both sera and synovia. MMPs activity, COL2A1 and Caspase-3 expression increased accompanied by articular cartilage degeneration and loss of proteoglycan. The level of expression of miRNA-146b, and 27b showed up-regulation at early stages of OA followed by down regulation in late ones in both sera and synovia together with decreased expression in TRAF-6 gene. OA was successfully graded in Egyptian donkeys with the use of COL2A1 and Caspase-3 for prognosis. miRNA-146b, miRNA-27b and COL10A1 in sera provide promising non-invasive circulating biomarkers that discriminate between normal, early and late grades of OA. However, MMPs failed to differentiate between early and late OA.
Keywords: Osteoarthritis; Donkey; Matrix metalloproteinases; COL2A1; miRNA-146b; miRNA-27b; TRAF-6; COL10A1; Caspase-3.



Dedication

*To my father, Mother, My lovely and
great husband ,Brothers, my sons*

And the soul of my sister

for their love and great support

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List of abbreviations

Abbreviation	Scientific Name
ACAN	Aggrecan
ACLT	Anterior cruciate ligament transaction
ADAMTS	A disintegrin and metalloproteinase with thrombospondin motifs
AGO	Argonaute
AP	Activator protein
Apaf-1	Apoptosis protease activating factor-1
APO-1	Apoptosis antigen 1
Bad	BCL-2 associated agonist of cell death
Bak	BCL-2 homologous antagonist killer
BAFF-R	B cell activating factor receptor
Bax	BCL-2 associated X protein
BCL-2	B-cell lymphoma 2
Bid	BH3 interacting-domain death agonist
Bim	Bcl-2-like protein 11
BMPs	Bone morphogenetic proteins
CAD	Caspase activated DNASE
CA-MMPS	Cysteine array matrix metalloproteinases
CARD	Caspase recruitment domain
CCN2	Connective tissue growth factor/ cysteine rich/nephroblastoma family protein 2
CD95	Cluster of differentiation 95
CD 120	Cluster of Differentiation 120
CD121a	Cluster of Differentiation 121a
CDP	Cartilage degradation phase
c-IAP1	cellular inhibitor of apoptosis protein-1
c-IAP2	cellular inhibitor of apoptosis protein-2
COL2A1	Collagen type II α 1
COMP	Cartilage oligomeric matrix protein
COX-2	Cyclooxygenase-2
CS	Chondroin sulphate
CT	Computed tomography
CTGF	Connective tissue growth factor
CXCL12	C-X-C motif chemokine 12