بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / هناء محمد علي

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: ....

The Possible Effect of Bone Marrow Derived Mesenchymal Stem Cells Versus Their Exosomes on Imiquimod-Induced Psoriasis-Like Skin Inflammation in Female Albino Rats. A Histological Study

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Histology and Cell Biology

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List of Abbreviations

ANOVA	Analysis of variant.
APCs	Antigen Presenting cells
BM-MSCs	Bone marrow mesenchymal stem cells
BMP-2	Bone Morphogenetic Proteins-2
CCR2	Chemokine Receptor Type 2
CD	Cluster of Differentiation
CFU-F	Colony Forming Unit-Fibroblasts
DC	Dendritic cells
DMD	Duchenne muscular dystrophy
DMEM	Dulbecco's modified Eagle's medium
FBS	Fetal bovine serum
GRO	Growth-Regulated Oncogene
GvHD	Graft Versus Host Disease
H&E	Hematoxylin and Eosin.
HGF	Hepatocyte Growth Factor
IDO	Indoleamine 2,3-dioxygenase
IFN-γ	Interferon-γ
IGF-1	Insulin-like Growth Factor-1
IL-(no.)	Interleukin-(number)
IMQ	Imiquimod
LSD	Least Significant Difference
miRNAs	micro RNAs
MT2A	Metallothionein 2A

NK	Natural Killer cells
NO	Nitric Oxide
OA	Osteoarthritis
PAS	Periodic Acid Schiff's
PBS	Phosphate Buffer Saline
PCNA	Proliferating Cell Nuclear Antigen
PCR	Polymerase Chain Reaction
PGE2	Prostaglandin E2
P-value	Probability of significance value.
TEM	Transmission Electron Microscopic
TGF-β	Transforming Growth Factor – Beta
Th (no.)	T helper (number) cell
TNF-α	Tumor Necrosis Factor-alpha

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Abstract

Introduction: Psoriasis is a chronic skin inflammatory disease. Bone marrow mesenchymal stem cells (BM-MSCs) and their derived exosomes are known for their immunomodulatory properties.

Aim of the Work: To investigate the effect of locally injected BM-MSCs and their derived exosomes in female albino rats subjected to imiquimod (IMQ)-induced psoriasis-like skin inflammation.

Materials and Methods: Fifty albino rats (40 females and 10 males) were used. The female animals were randomly classified into four groups; group I (control group), group II (IMQ group) where the rats received topical IMQ once daily for 5 consecutive days, group III (IMQ + BM-MSCs) where the rats received a dose of 1 million BM-MSCs on the first day only in addition to topical IMQ, and group IV (IMQ + BM-MSCs-derived exosomes) where the rats received purified concentrate of exosomes derived from BM-MSCs in addition to topical IMQ. The 10 male albino rats served as the source of BM-MSCs and their derived exosomes. After 5 days, all animals were sacrificed, and skin specimens were processed

for light microscopic studies: H&E and immunohistochemical staining for Proliferating Cell Nuclear Antigen (PCNA) and Y-chromosome identification using Real-time PCR. Morphometric measurements and statistical analysis were done for the mean epidermal thickness, the mean count of PCNA-positive keratinocytes in the epidermis, and the mean area of dermal PCNA-positive reaction.

Results: The general observations and microscopic examination of sections obtained from group II rats revealed psoriasis-like skin inflammatory reactions including acanthosis, parakeratosis, and marked inflammatory infiltrate. There was a statistically significant increase in the epidermal thickness and PCNA-positive reactions in group II compared to other groups. Groups III and IV showed significant improvement, however, group III showed almost normal histological structure.

Conclusion: BM-MSCs and purified exosomes concentrate were shown to significantly ameliorate psoriasis-like inflammatory changes in the skin of animal models.

Keywords: psoriasis; imiquimod; mesenchymal stem cells; exosomes