

ABSTRAK

**EFEK PEMBERIAN SEKRETOM PADA STRUKTUR HISTOLOGI
SENDI FEMOROPATELLAR TIKUS WISTAR (*Rattus norvegicus albinus*)
TERINDUKSI OSTEOARTRITIS OLEH MONOSODIUM IODOASETAT
DENGAN PEWARNAAN *HEMATOXYLIN-EOSIN*,
MALLORY'S ANILINE BLUE, DAN
*MASSON'S TRICHROME***

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Sekretom atau ekstrak media penumbuh sel punca mesenkimal (EMSPM) memiliki potensi terapeutik dalam perbaikan dan regenerasi jaringan serta berperan dalam memengaruhi pertumbuhan tulang dan *remodeling* jaringan. Penelitian ini bertujuan untuk melihat potensi sekretom sebagai agen terapi jaringan kartilago sendi femoropatellar yang rusak akibat osteoarthritis oleh induksi monosodium iodoasetat (MIA).

Penelitian dilakukan menggunakan 75 ekor tikus Wistar (*Rattus norvegicus albinus*) jantan berusia dua bulan yang dibagi menjadi lima kelompok, yaitu kelompok A sebagai kelompok kontrol sehat yang diberikan NaCl, kelompok B sebagai kelompok kontrol osteoarthritis, dan kelompok C, D, E sebagai kelompok induksi MIA-sekretom dosis beragam. Injeksi MIA diberikan secara intraartikular. Injeksi sekretom intramuskular diberikan sebanyak empat kali dengan interval antar injeksi selama seminggu. Pewarnaan preparat dilakukan dengan pewarnaan *Hematoxylin-eosin*, *Mallory's aniline blue*, dan *Masson's trichrome*. Analisis secara kualitatif dengan mengamati perubahan struktur histologi sendi.

Hasil pengamatan menunjukkan perubahan pada struktur histologi sendi yang menandakan kejadian osteoarthritis seperti kematian sel, proliferasi sel, kluster kondron, diskontinuitas permukaan, delaminasi, erosi, denudasi, ekskavasi, fibrilasi, deplesi matrix, dan pembentukan jaringan reparatif fibrokartilago. Terjadi perbaikan setelah pemberian injeksi sekretom berupa berkurangnya jumlah kondrosit mati, pembentukan jaringan reparatif kartilago, dan fibrilasi matriks kartilago. Pewarnaan khusus lain diperlukan untuk membedakan tipe kolagen seperti *Safranin O*, *Toluidine Blue*, dan pewarnaan *immunohistochemistry* untuk melihat sel-sel radang dan sel-sel imun.

Kata kunci: Femoropatellar, MIA, osteoarthritis, sekretom.

ABSTRACT

EFFECT OF SECRETOME ADMINISTRATION ON HISTOLOGICAL STRUCTURE OF THE FEMOROPATELLAR JOINT OF WISTAR RATS (*Rattus norvegicus albinus*) INDUCED WITH OSTEOARTHRITIS BY MONOSODIUM IODOACETATE WITH HEMATOXYLIN-EOSIN, MALLORY'S ANILINE BLUE, AND MASSON'S TRICHROME STAINS

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Secretome or the extracts of mesenchymal stem cell-conditioned medium (MSC-CM) have therapeutic potential in tissue repair and regeneration and play a role in promoting bone growth and tissue remodeling. This study aimed to examine the potential of secretome as a therapeutic agent for the damaged cartilage tissue in the femoropatellar joint due to osteoarthritis by monosodium iodoacetate (MIA) induction.

The study was conducted using 75 male Wistar (*Rattus norvegicus albinus*) rats aged two months which were divided into five groups, namely group A as a healthy control group injected with NaCl, group B as the osteoarthritis control group with MIA induction, group C, D, E as MIA-secretome induction group at various doses. MIA injection is given intra-articularly. Intramuscular secretome injection was given four times with a week intervals between injections. The sections were stained with hematoxylin-eosin, Mallory's aniline blue, and Masson's trichrome stains. Qualitative analysis was performed by observing changes in the histological structure of the joints.

The results showed changes in the histological structure of the joints that indicate the occurrence of osteoarthritis such as cell death, cell proliferation, chondron clusters, surface discontinuities, delamination, erosion, denudation, excavation, fibrillation, matrix depletion, and the formation of fibrocartilage reparative tissue. There was an improvement after administration of secretome injection in the form of a reduced number of dead chondrocytes, reduced formation of cartilage reparative tissue, and reduced fibrillation of the cartilage matrix. Another staining is needed to distinguish collagen types such as Safranin O and Toluidine Blue staining, and immunohistochemistry staining to see inflammatory cells and immune cells.

Keywords: Femoropatellar, MIA, osteoarthritis, secretome