

ABSTRAK

UJI TOKSISITAS AKUT *BOVINE UMBILICAL MESENCHYMAL STEM CELLS-CONDITIONED MEDIUM* (BUMSCs-CM) TERHADAP OTAK DAN LIMPA PADA HEWAN COBA TIKUS SPRAGUE DAWLEY

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Pengembangan terapi regeneratif berbasis sekretom terus meningkat, namun data keamanannya masih terbatas. Penelitian ini bertujuan mengevaluasi keamanan *Bovine Umbilical Mesenchymal Stem Cells-Conditioned Medium* (BUMSCs-CM) melalui uji toksisitas akut oral pada tikus Sprague Dawley. Sebanyak 50 ekor tikus (25 jantan, 25 betina) dibagi menjadi 5 kelompok: kontrol dan perlakuan dosis (5, 50, 300, dan 2000) mg/kg BB, kemudian BUMSCs-CM diberikan secara oral satu kali. Pengamatan meliputi gejala klinis, mortalitas, berat badan, berat relatif organ otak dan limpa, pengamatan makroskopis (*gross anatomy*), serta pemeriksaan histopatologi otak dan limpa dengan pewarnaan hematoxilin dan eosin (HE). Selain itu, juga dilakukan pemeriksaan profil hematologi dan biokimia darah. Hasil menunjukkan tidak ada mortalitas maupun perubahan perilaku yang signifikan. Secara makroskopis, tidak ditemukan abnormalitas pada organ otak dan limpa. Secara histopatologi, tidak ditemukan adanya kelainan struktur atau lesi patologis pada jaringan otak dan limpa di semua kelompok perlakuan. Profil hematologi dan biokimia darah sebagian besar masih dalam rentang normal. Disimpulkan bahwa BUMSCs-CM tidak menimbulkan efek toksik akut pada tikus Sprague Dawley dalam rentang dosis yang diuji, sehingga berpotensi aman untuk dikembangkan lebih lanjut dalam terapi regeneratif.

Kata kunci: BUMSCs-CM, uji toksisitas akut, sekretom, Sprague Dawley, terapi regeneratif

ABSTRACT

ACUTE TOXICITY TEST OF BOVINE UMBILICAL MESENCHYMAL STEM CELLS-CONDITIONED MEDIUM (BUMSCs-CM) ON BRAIN AND SPLEEN ORGANS OF SPRAGUE DAWLEY RATS

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The development of secretome-based regenerative therapy continues to increase, yet its safety data remain limited. This study aimed to evaluate the safety of Bovine Umbilical Mesenchymal Stem Cells-Conditioned Medium (BUMSCs-CM) through an acute oral toxicity test in Sprague Dawley rats. A total of 50 rats (25 males, 25 females) were divided into 5 groups: control and treatment groups at doses of 5, 50, 300, and 2000 mg/kg BW, then BUMSCs-CM was administered orally once. Observations included clinical signs, mortality, body weight, relative organ weight of the brain and spleen, macroscopic examination (gross anatomy), as well as histopathological examination of the brain and spleen using hematoxylin and eosin (HE) staining. In addition, hematological and blood biochemistry profiles were also examined. The results showed no mortality or significant behavioral changes. Macroscopically, no abnormalities were found in the brain and spleen. Histopathologically, no structural abnormalities or pathological lesions were observed in the brain and spleen tissues across all treatment groups. Hematological and blood biochemistry profiles were mostly within the normal range. It is concluded that BUMSCs-CM did not induce acute toxic effects in Sprague Dawley rats within the tested dose range, thus indicating its potential safety for further development in regenerative therapy.

Key words: BUMSCs-CM, acute toxicity test, secretome, Sprague Dawley, regenerative therapy