

ABSTRAK

UJI TOKSISITAS AKUT *BOVINE UMBILICAL MESENCHYMAL STEM CELLS-CONDITIONED MEDIUM* (BUMSCs-CM) TERHADAP HATI DAN PARU PADA TIKUS *SPRAGUE DAWLEY*

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Bovine Umbilical Mesenchymal Stem Cells-Conditioned Medium (BUMSCs-CM) merupakan produk sekretom yang mengandung berbagai faktor bioaktif dan berpotensi dikembangkan sebagai agen terapi regeneratif. Namun, sebelum digunakan secara luas, diperlukan evaluasi keamanan melalui uji toksisitas. Penelitian ini bertujuan untuk mengetahui efek toksik akut berdasarkan gejala klinis, perubahan bobot badan, profil hematologi, biokimia darah, gambaran makroskopis organ, histopatologi hati dan paru, serta pengklasifikasian tingkat bahaya/toksitas setelah pemberian BUMSCs-CM secara oral pada hewan uji. Penelitian ini menggunakan hewan uji tikus galur *Sprague Dawley* (25 ekor jantan dan 25 ekor betina) yang masing-masing dibagi ke dalam kelompok kontrol dan kelompok perlakuan dengan variasi dosis (5 mg/kg, 50 mg/kg, 300 mg/kg, dan 2000 mg/kg) BUMSCs-CM yang diberikan secara oral. Tikus akan diobservasi selama 14 hari dan di akhir akan dinekropsi. Uji toksisitas akut oral dilakukan berdasarkan pedoman OECD 420. Hasil penelitian menunjukkan bahwa pemberian BUMSCs-CM tidak menimbulkan gejala toksik maupun kematian pada hewan uji hingga dosis tertinggi yang diberikan. Selain itu, tidak terdapat perubahan signifikan pada parameter gejala klinis, perubahan bobot badan, profil hematologi, biokimia darah, gambaran makroskopis organ, histopatologi hati dan paru. Berdasarkan hasil tersebut, disimpulkan bahwa BUMSCs-CM tidak bersifat toksik pada dosis tertinggi (> 2000 mg/kg) sehingga diklasifikasikan pada kategori *5/unclassified*. Dengan demikian, BUMSCs-CM berpotensi aman untuk pengembangan lebih lanjut sebagai agen terapi.

Kata kunci: BUMSCs-CM, Histopatologi, Hati, Toksisitas Akut, OECD 420, Paru

ABSTRACT

ACUTE TOXICITY TEST OF BOVINE UMBILICAL MESENCHYMAL STEM CELLS-CONDITIONED MEDIUM (BUMSCs-CM) TOWARDS THE LIVER AND PULMONARY IN SPRAGUE DAWLEY RATS

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Bovine Umbilical Mesenchymal Stem Cells-Conditioned Medium (BUMSCs-CM) is a secretome product containing various bioactive factors and has the potential to be developed as a regenerative therapy agent. However, before its widespread use, safety evaluation through toxicity testing is required. This study aims to determine acute toxic effects based on clinical symptoms, changes in body weight, hematological profiles, blood biochemistry, macroscopic organ features, liver and lung histopathology, and classification of the level of danger/toxicity after oral administration of BUMSCs-CM in test animals. This study used *Sprague Dawley* rats (25 males and 25 females) which were each divided into control and treatment groups with varying doses (5 mg/kg, 50 mg/kg, 300 mg/kg, and 2000 mg/kg) of BUMSCs-CM administered orally. The rats will be observed for 14 days and at the end will be necropsied. The acute oral toxicity test was conducted based on OECD 420 guidelines. The results showed that administration of BUMSCs-CM did not cause toxic symptoms or death in test animals up to the highest dose given. In addition, there were no significant changes in clinical symptoms, changes in body weight, hematological profiles, blood biochemistry, macroscopic organ features, liver and lung histopathology. Based on these results, it was concluded that BUMSCs-CM is not toxic at the highest dose (> 2000 mg/kg) so it is classified in category 5/unclassified. Thus, BUMSCs-CM is potentially safe for further development as a therapeutic agent.

Key words: BUMSCs-CM, Acute toxicity, OECD 420, Histopathology, Liver, Lung