

ABSTRAK

UJI TOKSISITAS AKUT BOVINE UMBILICAL MESENCHYMAL STEM CELLS-CONDITIONED MEDIUM (BUMSCS-CM) TERHADAP ORGAN GASTROINTESTINAL PADA HEWAN COBA TIKUS SPRAGUE DAWLEY

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Bovine Umbilical Mesenchymal Stem Cells-Conditioned Medium (BUMSCs-CM) merupakan produk sekretom hasil kultur sel punca mesenkimal tali pusat sapi yang mengandung berbagai faktor bioaktif dan berpotensi dikembangkan sebagai agen terapi regeneratif. Namun, sebelum digunakan lebih lanjut, diperlukan evaluasi keamanan melalui uji toksisitas akut. Penelitian ini bertujuan untuk mengetahui efek toksik akut BUMSCs-CM setelah pemberian oral dosis tunggal terhadap tikus *Sprague Dawley*, khususnya berdasarkan gejala klinis, perubahan perilaku, mortalitas, berat badan, profil hematologi, biokimia darah, berat relatif organ, gambaran makroanatomi, serta histopatologi organ gastrointestinal. Sebanyak 50 ekor tikus jantan dan betina dibagi menjadi kelompok kontrol dan empat kelompok perlakuan yang menerima BUMSCs-CM secara oral dengan dosis 5, 50, 300, dan 2000 mg/kg BB. Pengamatan dilakukan selama 14 hari setelah perlakuan. Hasil penelitian menunjukkan bahwa pemberian BUMSCs-CM hingga dosis 2000 mg/kg BB tidak menyebabkan kematian, gejala klinis toksik, maupun perubahan perilaku pada tikus jantan dan betina. Berat badan dan berat relatif organ tidak menunjukkan perubahan yang mengarah pada toksisitas akut. Pemeriksaan makroanatomi lambung dan usus halus menunjukkan ukuran, warna, dan konsistensi organ yang normal. Parameter hematologi dan biokimia darah secara umum berada dalam atau mendekati rentang normal, sedangkan perubahan yang ditemukan tidak menunjukkan pola dosis-respons yang konsisten. Selain itu, gambaran histopatologi lambung dan usus halus tidak menunjukkan adanya lesi atau perubahan jaringan yang bermakna. Berdasarkan hasil tersebut, BUMSCs-CM tidak menunjukkan efek toksik akut setelah pemberian oral dosis tunggal hingga dosis 2000 mg/kg BB, sehingga berpotensi aman untuk pengembangan lebih lanjut sebagai agen terapi regeneratif.

Kata kunci: BUMSCs-CM, uji toksisitas akut, *Sprague Dawley*, gastrointestinal, lambung, usus halus.

ABSTRACT

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

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Bovine Umbilical Mesenchymal Stem Cells-Conditioned Medium (BUMSCs-CM) is a secretome product derived from the culture of bovine umbilical mesenchymal stem cells, containing various bioactive factors and showing potential for development as a regenerative therapeutic agent. However, before further application, its safety needs to be evaluated through an acute toxicity test. This study aimed to determine the acute toxic effects of BUMSCs-CM following single-dose oral administration in *Sprague Dawley* rats, particularly based on clinical signs, behavioral changes, mortality, body weight, hematological profile, blood biochemistry, relative organ weight, gross macroscopy, and histopathology of gastrointestinal organs. A total of 50 male and female rats were divided into a control group and four treatment groups that received BUMSCs-CM orally at doses of 5, 50, 300, and 2000 mg/kg body weight. Observations were conducted for 14 days after treatment. The results showed that administration of BUMSCs-CM up to a dose of 2000 mg/kg body weight did not cause mortality, toxic clinical signs, or behavioral changes in male and female rats. Body weight and relative organ weight did not show changes indicative of acute toxicity. Macroanatomical examination of the stomach and small intestine showed normal organ size, color, and consistency. Hematological and blood biochemical parameters were generally within or close to the normal range, while the observed changes did not show a consistent dose-response pattern. In addition, histopathological examination of the stomach and small intestine showed no significant lesions or tissue alterations. Based on these results, BUMSCs-CM did not exhibit acute toxic effects after single-dose oral administration up to 2000 mg/kg body weight, indicating its potential safety for further development as a regenerative therapeutic agent.

Keywords: BUMSCs-CM, acute toxicity test, *Sprague Dawley*, gastrointestinal, stomach, small intestine