

<https://doi.org/10.7124/bc.000B55>

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INCREASED DERMAL SKIN LAYER VASCULARIZATION UNDER THE INFLUENCE OF CULTURE MEDIUM CONDITIONED WITH THE 4BL CELL LINE

Background. Our group is developing new temporary dermal equivalents, which are expected to be able not only to close the wound surface before skin transplantation, but also to stimulate natural regenerative processes in the wound bed. **Methods.** Grade IIIb burns were made on the skin of Wistar rats and Balb/c mice. The cells of original 4BL line, obtained from human peripheral blood (mesenchymal-like cells), were cultured under standard conditions. DMEM-HG medium without serum and antibiotics was conditioned with 4BL cell line for 24 hours. Biologically inactive hydrogel based on 3% carbomer was mixed with an equal amount of cell-free conditioned medium (in this case, the hydrogel acts only as a carrier of the conditioned medium). This mixture was applied to the wound bed once a day. A microscopic examination of the wound bed and a histological examination of dermis fragments from the wound bed during the healing process were performed. **Results.** In experiments using adult rats, microscopic examination of the wound bed on the 7th day of treatment showed that in the negative control group (no burn wound treatment was performed) a new capillary formation was not observed in the burn wound bed. At the same time, in the adequate control group (application of a hydrogel prepared from a fresh DMEM-HG medium on the wound), the formation of individual capillaries was observed. At the same time, in the experimental group (application of a hydrogel prepared from a conditioned cell-free DMEM-HG medium on the wound), significantly more intensive capillary formation was observed. In experiments using mice, the results of histological examination of dermis fragments from the wound epithelialization zone showed that in the younger age group (4 months) there was an increase in the number of newly formed blood vessels. At the same time, in the older age group (8 months), the increase in the absolute number of vessels was less manifested, but there was a significant (2–3 times) increase in their diameter. **Conclusions.** Cell-free culture medium conditioned with 4BL cell in rodent model stimulated vascularization in the dermal layer of the burn wound bed. The character of neovascularization may vary depending on the age of the experimental animals. **Grants.** IMBG Simons Foundation Grant for Ukrainian institutions № SFI-PD-Ukraine-00017453.

Keywords: cellular biotechnology, dermal covering, dermal equivalent, MSCs, conditioned media, secretome, burns, vascularization.

Received: 05.06.2026; Accepted: 08.09.2026; Published: 29.09.2026

Citation: Papuga O.Ye., Macewicz L.L., Ruban T.P., Sukhorada O.M., Lukash L.L. (2026) Increased dermal skin layer vascularization under the influence of culture medium conditioned with the 4BL cell line. *Biopolymers & Cell*, Special issue(42), 28. <https://doi.org/10.7124/bc.000B55>

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