

# Xenogener pisciner Hautersatz bei Verbrennungen und Weichgewebedefekten

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BOCHUM

1. Deutsche Gesellschaft für Verbrennungsmedizin (DGV) (2021) Langfassung der Leitlinie „Behandlung thermischer Verletzungen des Erwachsenen“. AWMF online 004-001
2. Chear Lee K, Joory K, Moiemien NS (2014) History of burns: the past, present and the future: *Burns Trauma* 2: 169-180
3. Jeschke MG, Baar ME van, Choudhry MA, et al (2020) Burn injury. *Nat Rev Dis Primers* 6: 11
4. Engrav LH, Heimbach DM, Reus JL, et al (1983) Early excision and grafting vs. nonoperative treatment of burns of indeterminate depth: a randomized prospective study. *J Trauma* 23: 1001-1004
5. Tam J, Wang Y, Farinelli WA, et al (2013) Fractional skin harvesting: autologous skin grafting without donor-site morbidity. *Plast Reconstr Surg Glob Open* 1: e47
6. Voineskos SH, Ayeni OA, McKnight L, et al (2009) Systematic review of skin graft donor-site dressings. *Plast Reconstruct Surg* 124: 298-306
7. Rennekampff HO, Rabbels J, Reinhard V, et al (2006) Comparing the Vancouver Scar Scale with the cutometer in the assessment of donor site wounds treated with various dressings in a randomized trial. *J Burn Care Res* 27: 345-351
8. Behr B, Megerle KO, Germann G, et al (2008) Neue Konzepte in der Oberflächentherapie bei Verbrennungswunden. *Handchir Mikrochir Plast Chir* 40: 361-366
9. Alam K, Jeffery SLA (2019) Acellular fish skin grafts for management of split thickness donor sites and partial thickness burns: a case series. *Mil Med* 184:16-20
10. Magnusson S, Baldursson BT, Kjartansson H, et al (2017) Regenerative and antibacterial properties of acellular fish skin grafts and human amnion/chorion membrane: implications for tissue preservation in combat casualty care. *Mil Med* 182: 383-388
11. Trevitt CR, Singh PN (2003) Variant Creutzfeldt-Jakob disease: pathology, epidemiology, and public health implications. *Am J Clin Nutr* 78: 651S-656S
12. Magnússon S, Baldursson BT, Kjartansson H, et al (2015) Decellularized fish skin: characteristics that support tissue repair. *Laeknabladid* 101: 567-573
13. Magnússon S, Kjartansson H, Baldursson BT, et al (2018) Acellular fish skin grafts and pig urinary bladder matrix assessed in the collagen-induced arthritis mouse model. *Int J Low Extrem Wounds* 17: 275-281
14. Baldursson BT, Kjartansson H, Konráðsdóttir F, et al (2015) Healing rate and autoimmune safety of full-thickness wounds treated with fish skin acellular dermal matrix versus porcine small-intestine submucosa: a noninferiority study. *Int J Low Extrem Wounds* 14: 37-43
15. Trautinger F, Kokoschka EM, Menzel EJ (1991) Antibody formation against human collagen and C1q in response to a bovine collagen implant. *Arch Dermatol Res* 283: 395-399
16. Trentham DE, Townes AS, Kang AH, et al (1978) Humoral and cellular sensitivity to collagen in type II collagen induced arthritis in rats. *J Clin Invest* 61: 89-96
17. Charriere G, Bejot M, Schnitzler L, et al (1989) Reactions to a bovine collagen implant: clinical and immunologic study in 705 patients. *J Am Acad Dermatol* 21: 1203-1208
18. Cukier J, Beauchamp RA, Spindler JS, et al (1993) Association between bovine collagen dermal implants and a dermatomyositis or a polymyositis-like syndrome. *Ann Intern Med* 118:920-928
19. Grabenstein JD (2013) What the world's religions teach, applied to vaccines and immune globulins. *Vaccine* 31: 2011-2023
20. Simoons FJ (1973) The sacred cow and the constitution of India. *Ecol Food Nutr* 2: 281-295

21. Yan Y, Jiang W, Spinetti T, et al (2013) Omega-3 fatty acids prevent inflammation and metabolic disorder through inhibition of NLRP3 inflammasome activation. *Immunity* 38: 1154–1163
22. L'homme L, Esser N, Riva L, et al (2013) Unsaturated fatty acids prevent activation of NLRP3 inflammasome in human monocytes/macrophages. *J Lipid Res* 54: 2998–3008
23. Mil-Homens D, Ferreira-Dias S, Fialho AM (2016) Fish oils against burkholderia and pseudomonas aeruginosa: in vitro efficacy and their therapeutic and prophylactic effects on infected galleria mellonella larvae. *J Appl Microbiol* 120: 1509–1519
24. Mil-Homens D, Bernardes N, Fialho AM (2012) The antibacterial properties of docosahexaenoic omega-3 fatty acid against the cystic fibrosis multiresistant pathogen Burkholderia cenocepacia. *FEMS Microbiol Lett* 328: 61–69
25. Imai Y (2015) Role of omega-3 PUFA-derived mediators, the protectins, in influenza virus infection. *Biochim Biophys Acta* 1851: 496–502
26. Dorweiler B, Trinh TT, Dünschede F, et al (2018) The marine omega 3 wound matrix for treatment of complicated wounds: a multicenter experience report. *Gefäßchirurgie* 23: 46–55
27. Woodrow T, Chant T, Chant H (2019) Treatment of diabetic foot wounds with acellular fish skin graft rich in omega-3: a prospective evaluation. *J Wound Care* 28: 76–80
28. Michael S, Winters C, Khan M (2019) Acellular fish skin graft use for diabetic lower extremity wound healing: a retrospective study of 58 ulcerations and a literature review. *Wounds* 31: 262–268
29. Kirsner RS, Margolis DJ, Baldursson BT, et al (2020) Fish skin grafts compared to human amnion/chorion membrane allografts: a double-blind, prospective, randomized clinical trial of acute wound healing. *Wound Repair Regen* 28: 75–80