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DEVELOPMENT OF NOVEL POROUS NASAL SCAFFOLD USING PRECISION INJECTION MOLDING

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This study presents a novel fabrication technique involving injection molding and conventional particle leaching (IM/PL) to obtain the L-shaped nasal scaffold for rhinoplasty. Numerical simulations are performed for the optimal design. Sodium chloride (NaCl) is mixed with the poly (lactic-co-glycolic acid) (PLGA) granules using a screwed extruder and used as materials of the scaffold. Subsequently, the L-shape nasal scaffold is fabricated by injection molding. The product is then immersed in deionized (D.I.) water to remove NaCl. Mechanical, physical, and degradation properties for the L-shaped nasal scaffold are measured after it is dried. MG-63 osteoblastlike cells are chose to cell culture and 3-[4,5-dimethylthiaziazolo-2-y1]-2,4-diphenyltetrazolium bromide (MTT) test in the scaffold. Results of the MTT test indicate that cell proliferation is significantly enhanced in scaffold by the IM/PL technique when compared with scaffold manufactured by the solvent casting/particle leaching technique.