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STROMAL VASCULAR FRACTION FROM LIPOASPIRATE INFRANATANT

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Introduction: Lipoaspirate has shown great promise as a source of progenitor cells for use in regenerative medicine. The stromal vascular fraction (SVF) can be isolated from lipoaspirate using enzyme digestion and centrifugation, but this approach may be limited by the labour-intensive nature of the technique as well as ambiguities in current governmental regulations. An alternative approach to obtain SVF from lipoaspirate was studied.

Methodology: Paired (collected from contralateral regions) lipoaspirate specimens were acquired from 30 consenting patients (age 24-62; 22 females, 8 males) by suction-assisted liposuction (SAL) and nutational infrasonic liposuction (NIL). The infranatant from 50 ml of adipose tissue (LAF) was centrifuged at 400 g×5 min and the resultant pellet was collected with a pipette. Time=15-20 min. The respective SVFs cell populations were counted using an optical fluorescent cell counter (Nexcelom A2000) and the fluorescent stains-acridine orange (AO) and propidium iodide (PI).

Results: The number of nucleated, live cells from SAL infranatant was 97,345±23,435 per ml of adipose tissue and from NIL infranatant was 335,621±81,274 per ml of adipose tissue. The p value is <0.00001, n=30.

Conclusions: Regenerative cells can be isolated from the lipoaspirate infranatant from either SAL or NIL, although in lower quantities than from enzyme digestion. NIL acquisition yielded 3.5×the number of cells over that acquired from SAL. The time, skill, and cost of producing SVF from infranatant is less than using enzyme digestion, which potentially make these regenerative therapies accessible to more physicians and patients.

Biography

Robert Bowen graduated from the University of Illinois, School of Medicine and trained in internal medicine, critical care, and pulmonary medicine at the University of Virginia and West Virginia University (WVU) medical centers. He was trained in Laser Bronchoscopy in 1982/1983 and after completing a Fellowship in cosmetic anti-aging and regenerative medicine extended his laser experience to include aesthetic therapies. He is currently the Professor of Medicine at WVU and Director of the Center for Wound Care and Hyperbaric Medicine at WVU Berkeley Medical Center, USA. His current research interests include the translation of adipose derived stem cell treatments and light-based therapies into clinical applications in wound care and cosmetic medicine.

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