Neither local nor systemic postoperative complications were observed in the study subjects during a 6-month follow-up. Concentration of SOD in the NAC group turned out to be significantly higher than in the controls, in both fresh (p=0.041) and frozen samples (p=0.004). Also SOD activity in NAC group was significantly higher, both in fresh and frozen samples (p=0.023 and p=0.003, respectively). Interestingly, no statistically significant intergroup differences were observed in terms of ROS levels. The level of NO in frozen samples from the controls was significantly higher than in NAC group (p=0.009).

The results of this study imply that addition of NAC to tumescent solution may counteract oxidative stress the cells of autologous fat graft are exposed to during the harvesting procedure. This may contribute to lesser volume of the graft that undergoes resorption over time (the study is ongoing). The lack of adverse events after the infiltration of the fat graft donor site with NAC-enriched solution suggests that this technique is safe. If addition of NAC was shown to improve the retention of the graft, this technique might become a routine adjunct method used during this type of procedures.

The Promotion of Adipogenesis in a Rat Model of Radiation Induced Fibrosis of the Mammary Fat Pad

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BACKGROUND/PURPOSE: Radiofibrosis of breast tissue ultimately compromises breast tissue reconstruction by interfering with tissue viability and healing; autologous fat transfer has recently been shown to reduce radiotherapy-related tissue injury, thought to be attributed to the presence of adipose-derived pluripotent stem cells.\(^1,2\) We have identified a novel gene HMMR/RHAMM, whose expression decreases adipogenesis and increases fibrosis. We have developed RHAMM peptide mimetics (NP-110) to block RHAMM signalling, and it is thought that the injection of such a peptide will promote adipogenesis and decrease fibrosis in mammary tissue in rats.

METHODS: High frequency ultrasound was used to assess volume through thickness measurements and 3D reconstruction of mammary fat pads in 20 retired breeder female rats that were non-irradiated, irradiated, treated, and not-treated with peptide NPI-110 at days 0, 7, 14, and 21. Rats were euthanized at Day 21, and mammary fat pad tissues were processed for expression of fibrotic and adipogenic markers using real-time polymerase chain reaction and immunohistochemistry.

RESULTS: Volume estimates of fat pad and expression of fibrotic markers such as Collagen-1, Collagen-3, and TGF\(\beta\)-1, and adipogenic markers such as PPAR\(\gamma\); adiponectin and perilipin were ameliorated by peptide NP-110 and radiotherapy when quantified via qPCR and immunohistochemistry. NPI-110 significantly reduced skin inflammation and radiofibrosis, the latter assessed by collagen fibril deposition via picrosirius red staining, and increased mRNA expression of adipogenic markers.

CONCLUSION: Results from this study may aid in therapies in the human patient population which decrease the significant morbidity associated with a very challenging and common clinical problem — reconstruction in previously radiated beds in general, and breast cancer specifically.

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Transplanted Fat Adapts to the Environment of the Recipient: A Study to Investigate the Suitability of Donor Recipient Obesity Mismatch in Face Transplantation

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