Platelet-rich plasma and stem cells in androgenetic alopecia — what is the evidence

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No conflict of interest
Platelet Rich Plasma

Factors released by these platelets after their activation, such as: PDGFs (PDGFaa, PDGFbb, PDG-Fab), TGF-β1, TGF-β2, EGF, VEGF, FGF

Promote proliferation of DPCs and may be beneficial for AGA

Clinical experiments indicate that patients with AGA treated with autologous PRP show improvements: clinical, hair count and thickness


2. Follicular Stem Cells isolation / injection (no culture)


Extraction of the scalp tissue - punch

Cut into the strips (2x2 mm)

Eliminate excess adipose tissue.

Isolate the HFSC by mechanical centrifugation (filters the cell population with a size of 50 μm, selecting the HFSC)

Processed in a device (Rigeneracons®).

Solution injected in bald areas.
2.b. ADSC Liposuction/centrifugation/isolation/injection

Ideal cell population for regenerative medicine:

- Easy isolation
- Non-immunogenic properties
- Multipotential nature
- Differentiation into various cell lines
- Angiogenesis potential
- Hair improvement post-transplantation for plastic surgery

Mesenchymal Stem Cells produce GF (VEGF, HGF, IGF, PDGF)


3. Surgical division/Partial implantation HF

Extracted partial longitudinal FU can regenerate HF

Partial FU remained in donor area survive/produce HF

Multiply hair HF in vivo preserve donor area


Gho CG, Broun JEF. British Journal of Dermatology 2004; 150: 860–868. Cutaneous Biology Human follicular stem cells: their presence in plucked hair and follicular cell culture
Hair Follicle Generation by Injections of Adult Human Follicular Epithelial and Dermal Papilla Cells into Nude Mice.

Evaluate hair induction by injecting adult cultured human dermal papilla cells and a mixture of hair epithelial and dermal papilla cells in 15 C57BL/6 nude mice. Cells were cultured.

Three groups:
- Cultured dermal papilla
- Mixture of cultured epithelial and DP cells
- Placebo [phosphate-buffered saline (PBS)]

Histopathologic examination of the injection sites showed evidence of hair growth in samples that received cells (PKH tracing confirmed the presence of transplanted cells in the new hair) compared with control group. Group that received epithelial and dermal papilla cells had visible evidence of hair growth.