Session: regenerative medicine: autologous treatment

President of the Kazakhstan Association of Dermatovenereologists and Dermatocosmetologists, Honored Scientist of the Republic of Kazakhstan, MD, Professor Batpenova Gulnar
Kazakhstan Association of dermatovenereologists and dermatocosmetologists

**Date of Creation:** April 2012

**Purpose of creation:** unification and coordination of the Association members’ activities, representation and protection of their professional rights and legal interests

Today in the ranks of KADD there are more than 300 dermatologists and dermatocosmetologists from all regions of the Republic.
According to the results of the statistical ranking, conducted by the "General Classification of Economic Activities" Kazakhstan Association of dermatologists, dermatocosmetologists entered the TOP 30 among enterprises of the Republic of Kazakhstan with the title "Industry Leader 2014"
The priority activity of KADD –
to increase the professional level of specialists

- Advanced training courses, improvements and master classes in Astana and other regions of Kazakhstan
- Regional and Republican Conferences
- Eurasian Congress of Dermatovenerology, Cosmetology and Aesthetic Medicine
- Full / partial funding of overseas internships
- Participation in international congresses, symposia, master classes and other events.
KADD initiated the open door days in the Republic of Kazakhstan to raise public awareness about the treatment and prevention of skin diseases.

October 29 - Psoriasis Day is held on the initiative of the International Federation of Psoriasis Patient Associations.

June 25 - World Vitiligo Day

May 15 - World Melanoma Day

February 28 - Day of orphan diseases
Since 2017, under the auspices of KADD, the first fund of helping children with epidermolysis bullosa – “Butterflies Children of Kazakhstan”’ – has started its work.

1 year of activity:

- Provision of patients with specialized dressings from local budget became available in 12 regions of Kazakhstan
- More than 150 dermatologists, pediatricians, geneticists, as well as nurses from all regions of Kazakhstan were trained
- Developed and implemented a roadmap for treating children with orphan diseases.
- Organized targeted assistance for patients in the regions
KADD’ international partners

IMCAS

IDS

ISD

International Dermoscopy Society
PRP TO TREAT HAIR DISORDERS - MYTH AND REALITY?

G. Batpenova, MD, professor
«Astana Medical University»
Kazakhstan, Astana
PRP-therapy in Kazakhstan

By the efforts of the Association, today PRP technology is successfully used in regenerative medicine.

- Dermatology and trichology
- Aesthetic medicine
- Traumatology, orthopedics, sports medicine
- Surgical and therapeutic dentistry
- Reconstructive surgery
**AUTOLOGOUS MATERIALS USED IN REGENERATIVE MEDICINE**

- PRP/PRF
- Autologous skin, fat
- Vascular stromal fraction
- Fibroblasts
- Hair follicles

Using of the autologous materials circumvents the problem of infections transmission and the development of immune rejection reactions.
The range of drugs and treatments that can be offered to patients suffering from chronic hair loss is limited.

To ensure sustainable hair regrowth, continuous treatment is necessary.

Treatment of androgenic alopecia will not restore hair growth to their prepubertal density.

The main goal of therapy is to prevent further progression of hair loss, to improve the patient's quality of life.
Existing myths about PRP

➢ **Myth 1:** PRP is not effective for hair loss.

➢ **Myth 2:** PRP is effective in any type of hair loss.

➢ **Myth 3:** PRP monotherapy replaces all other treatments.

➢ **Myth 4:** Achievement of 100% result after one course of PRP.
Why did the myths about PRP come about?

- The lack of uniform clinical protocols and indications for the PRP procedure (selection criteria, multiplicity, interval, depth of administration, etc.).
- Many technical parameters of the procedure may affect the effectiveness of PRP (equipment, receiving mode of plasma enriched with platelets, etc.).
- Limited number of randomized trials
The purpose of PRP therapy: the receipt and delivery of growth factors for the regeneration of soft and bone tissue, hair follicles.

The advantages of PRP compared to other autologous products:
Efficiency Safety Simplicity

Platelet

Fibroblast Growth Factors, Vascular Endothelial Growth Factors, Insulin-like growth factor, Thrombocyte growth factor, Nerve growth factor, Keratinocyte growth factor

Regeneration of the dermis, hair follicle, bone and cartilage structures, Formation of the extracellular matrix Angiogenesis
Involvement of Platelet-Derived Growth Factor Receptor-α in Hair Canal Formation

Nobuyuki Takakura, Hikari Yoshida, Takahiro Kanitada,† Satomi Nishikawa, and Shin Ichi Nishikawa
Department of Molecular Genetics, Faculty of Medicine, Kyoto University, Kyoto; and †Department of Immunology, Faculty of Medicine, Tottori University, Tottori, Japan

Hair follicles develop and are maintained by multiple rounds of inductive events involving interactions among various cell types within the follicles and the adjacent mesenchyme. Although evidence suggests that several growth factors, cell adhesion molecules, and transcriptional regulators are involved in these cell-cell interactions, the molecular mechanisms regulating each pivotal step of hair follicle development, such as formation of the hair germ, root sheath, sebaceous gland, and hair canal, remain largely unknown. In this study, we established the antagonistic monoclonal antibody APA5 against platelet-derived growth factor (PDGF) receptor-α (PDGFR-α) and used it to investigate the role of PDGFR-α in neonatal skin development. In addition to the dermal mesenchyme, a known site of PDGFR-α expression, immunohistologic staining of neonatal skin detected transient expression of PDGFR-α in the perinatal epidermis for several days. On the other hand, ligands for PDGFR-α were detected in epithelial cells and sebaceous glands of hair follicles. To determine whether this contiguous expression of PDGFR and PDGFR-α in neonatal skin plays a functional role, we injected APA5 into neonates to block the function of PDGFR-α. Consistent with the PDGFR/PDGFR-α expression in the neonatal skin, two defects were induced by this procedure. First, hair canal formation in the epidermis was severely suppressed. Second, the growth of dermal connective tissues and of hair follicles of pelage hairs was suppressed. These results indicate that PDGF signals are involved in both the epidermis-follicle interaction and the dermal mesenchyme-follicle interaction required for hair canal formation and the growth of the dermal mesenchyme, respectively. Key words: PDGFR-α/hair follicle/ APA5. J Invest Dermatol 107:770–777, 1996

Why PRP is effective in hair pathology?

During periods of embryogenesis and neonatality, platelet-derived growth factors (PDGF) are mandatory cytokines involved in the formation of the hair channel, hair follicles and the growth of the dermal mesenchyme.
ANALYSIS OF USING PRP THERAPY IN NON-SCAR ALOPECIA:
ANDROGENIC, DIFFUSE AND AREATA
2010 - 2019

Study design

Clinical groups:
Total 187 patients
- Androgenic Alopecia: 112 (M / F: 72/40)
- Alopecia areata: 48 (M / F: 19/27)
- Diffuse alopecia: 17 (F 17)

Diagnostics
- Clinical and trichoscopic diagnostics, photo documentation
- Laboratory diagnosis of hormonal and metabolic status

Therapy protocol
- PRP-therapy as part of complex or monotherapy
- Control trichoscopy monthly and photocontrol after 6 and 12 months
PRP procedure protocol

PRP was prepared using "Tropocells" in the Republic of Kazakhstan. One tube provides 2.0 ml of PRP from 11.0 ml of whole blood. One procedure requires from 2.0 ml to 6.0 ml of platelet-rich plasma.

Stage 1 - nappage technique throughout the area of sparse hair with an interval of 3-4 mm, at a depth of 0.5-2.0 mm; 13 mm needle, 30G or mezoroller.

Stage 2 - micro papular technique - as an additional technique in areas of pronounced hair loss, 13 mm needle, 30G
Results of PRP-therapy:
Male, 59 years old, Diagnosis: Androgenetic Alopecia, 3 procedures (once a month)

November 2016, before the start of treatment
Stage of alopecia on the Norwood-Hamilton scale - V

February 2017, after 3 PRP procedures, with an interval of 1 time per month,
Transition to stage IV on the Norwood–Hamilton scale
Increased thickness and darkening of the hair, reducing the area of sparse hair
Results of PRP-therapy:
Patient 33 years old, diagnosis: Androgenic alopecia,
4 procedures (1 time per month)

March 2017, before the start of treatment, Stage II baldness on the Ludwig scale

September 2017, after 6 months., doubling the hair shafts from a single hair follicle, the disappearance of the “gaping crater-shaped” mouths of the funnel of the follicle, the thickening of the shaft and the increase in the thickness of the hair, the transition to Stage I baldness on the Ludwig scale
RESULTS OF PRP-therapy: Patient 27 years old, diagnosis: Alopecia areata
4 PRP procedures

10.02.12 before treatment
10.06.12 after 3 procedures
22.08.12 after 4 procedures
Growing hair has a larger diameter compared to the control group.

The increase in the number of hair in 1 sq. Cm. (Prime, March 2015)

PRP Therapy Stimulates Live Follicles

New hair growth is observed, but not the formation of a new follicle, new follicles are not produced (EADV, 2018)

Increase hair density by 1cm²
CONCLUSIONS

MYTHS

➢ **Myth 1:** PRP is not effective for hair loss.

➢ **Myth 2:** PRP is effective in all forms of hair loss.

➢ **Myth 3:** PRP monotherapy replaces all other treatments.

➢ **Myth 4:** Achievement of 100% result after one PRP procedure.

REALITY

➢ PRP therapy is effective in androgegetic and areata alopecia in women and men.

➢ PRP therapy is not effective in the diffuse form of alopecia.

➢ PRP therapy is compatible with other therapeutetic techniques and technologies.

➢ To achieve the result, a course of PRP therapy is required.
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For questions about participation as a speaker and application to the report, please call:
+7 701 533 42 19 or send email to tatkina@yandex.ru
Tatyana Tarkina

For questions about registration and filling the registration form, please call:
+7 705 963 21 64 or send email to aimoldina.a@mail.ru
Alma Aymoldina

For questions about submission articles, please call:
+7 701 544 21 71 or send email to tsoy_natasha@inbox.ru
Natalya Tsoy
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Thanks for attention!