World Congress on Dermatology Research

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Poster Presentation

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Spatiotemporal expression of NRAS and occurrence of giant congenital melanocytic nevi

Qingxiong Yu
Shanghai Jiao Tong University School of Medicine, China

Statement of the Problem: The mechanism of giant congenital melanocytic nevus formation has not been fully understood. Mutant NRAS is the main driven gene in GCMN according to recent researches. Melanocytic precursor cells proliferate at the embryonic stage after acquiring NRAS mutation. However, the reason why GCMN undergoes intense proliferation in the embryonic stage but stops proliferating postnatal is still unknown. The current theory for this phenomenon is that the GCMN undergoes oncogene-induced senescence (OIS). However, insufficient evidence of senescence-induced growth arrest was found in GCMN. It is believed that excessively high mutated RAS signalling leads to cell senescence and excessively low mutated RAS signalling cannot drive cell proliferation. to understand the formation mechanism of GCMN, we still have to understand the expression level of the mutant gene in the physiological state of GCMN. Methodology & Theoretical Orientation: White et al. produced a high-resolution mRNA expression time course of embryonic development in zebra fish, and we found out the dynamic changes of the expression level of KRAS, NRAS and HRAS in the sequence data. The results showed that NRAS had a high expression level in the early embryonic stage and gradually decreased expression in the late embryonic stage, however the expression of KRAS and HRAS was relatively stable in the whole embryonic development stage. Findings: The NRAS gene is spatiotemporal differently expressed in the embryonic stage of zebra fish, which provides clues to the pathogenesis of giant congenital melanocytic nevi. Conclusion & Significance: In this study, we hypothesize that the expression level of the NRAS gene changes dynamically during the development and differentiation of neural crest cells into melanocytes, and it is the NRAS expression level that determines whether cell proliferation or quiescent.

Recent Publications

1. Charbel C, Fontaine RH, Malouf GG, Picard A, Kadlub N, El-Murr N, How-Kit A, Su X, Coulomb-L'Hermine A, Tost J, Mourah S, Aractingi S, Guégan S NRAS mutation is the sole recurrent somatic mutation in large congenital melanocytic nevi. J Invest Dermatol, 2014, 134:1067-1074.
2. Kinsler VA, Thomas AC, Ishida M, Bulstrode NW, Loughlin S, Hing S, Chalker J, McKenzie K, Abu-Amero S, Slater O, Chanudet E, Palmer R, Morrogh D, Stanier P, Healy E, Sebire NJ, Moore GE. Multiple congenital melanocytic nevi and neurocutaneous melanosis are caused by postzygotic mutations in codon 61 of NRAS. J Invest Dermatol, 2013, 133:2229-36.
3. Tran SL, Haferkamp S, Scurr LL, Gowrishankar K, Becker TM, Desilva C, Thompson JF, Scolyer RA, Kefford RF, Rizos H. Absence of distinguishing senescence traits in human melanocytic nevi. J Invest Dermatol, 2012, 132:2226-34.

Biography

Qingxiong Yu has his expertise in basic and translational medical research of giant congenital melanocytic nevus. He proposed that the spatotemporal expression changes of oncogenes may affect the occurrence and development of neoplasm. His research brings new perspectives to the pathogenesis of giant congenital melanocytic nevi.

yuqingx@hotmail.com

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Accepted Abstracts

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Glycation injury effects on aging and possible ways of prevention

Fatema Tasnim
Center for the Women of New York, United States

Glycation is both a physiological and pathological process which mainly affects proteins, nucleic acids and lipids. Exogenous and endogenous glycation produces deleterious reactions that take place principally in the extracellular matrix environment or within the cell cytosol and organelles. Advanced glycation end product (AGE) formation begins by the non-enzymatic glycation of free amino groups by sugars and aldehydes which leads to a succession of rearrangements of intermediate compounds and ultimately to irreversibly bound products known as AGEs. Accumulation of advanced glycation end products (AGEs) on nucleotides, lipids, and peptides/proteins are an important part of the aging process in humans. Recent studies have revealed the contributing roles of AGEs in the development of various aging-related conditions, such as diabetes, heart disease and cancer. It is known that physical exercise improves the lipid profile, insulin resistance and reduces the risk of cardiovascular diseases.

Controlling the blood sugar level is a natural method to inhibit glycation in diabetes. A large number of plants and natural biomolecules have been shown to have antidiabetic effects too. It is also seen from animal studies that exercise reduces the concentration of AGEs and highly reactive intermediates of AGE. So, it can be stated that glycation can be prevented by the natural defense mechanisms in the body, synthetic and natural inhibitors.

Recent Publications

1. Gladyshev VN. On the cause of aging and control of lifespan: heterogeneity leads to inevitable damage accumulation, causing aging; control of damage composition and rate of accumulation define lifespan. Bioessays. 2012;34:925–9.
2. Gladyshev VN. The origin of aging: imperfectness-driven non-random damage defines the aging process and control of lifespan. Trends Genet. 2013;29:506–12.
3. Kim, C. S., Park, S., & Kim, J. The role of glycation in the pathogenesis of aging and its prevention through herbal products and physical exercise. Journal of exercise nutrition & biochemistry, 2017, 21(3), 55–61.

fatemassmc@gmail.com

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Modern approach to the treatment of vitiligo

Botir T. Saatov
Saatov Vitiligo Clinic, Uzbekistan

Currently, external liposome-based products are considered the most effective and advanced in the treatment of vitiligo.

The purpose of this work is to obtain a liposomal substance from natural lipids and its use for patients suffering from vitiligo. The main function of liposomes is the delivery of physiologically active substances and drugs inside the cells. By incorporating biologically active substances, vitamins, antioxidants, trace elements into the composition of the liposomes, these ingredients can be delivered to the deeper layers of the skin, which leads to changes in metabolic processes and improved physiological and pathological conditions in the skin.

In our studies, phospholipids and cholesterol for liposomes were obtained from cattle brains. Multilayer liposomes were created by the traditional method by using ultrasonic lipid treatment. The liposomes were encapsulated with the antioxidant α-tocopher, trace elements - zinc, copper, and the amino acid tyrosine. On the basis of the prepared multicomponent liposomal substance, the domestic product was developed in aer osol form. Toxicological study created by the tool showed a complete lack of toxicity. Experiments conducted on laboratory animals have established that has the ability to retain moisture in the skin and to be a potential moisturizing agent, which has antioxidant, membrane-modifying, transporting, reconstructing, melanogen-stimulating action.

Conclusion: The clinical application of the developed multicomponent liposomal drug in patients with vitiligo convincingly shows that external use significantly exceeds the standard method of therapy in therapeutic efficacy and has transporting, membrane modifying, antioxidant and melanogenesis-stimulating properties.

Recent Publications

1. Konstantinova VA, Olisova OY, Gladko VV, Burova EP. Vitiligo – New Treatment Approach. Clin Cosmet Investig Dermatol, 2019; 12:911-917
2. Manga P, Elbuluk N, Orlow SJ. Recent advances in understanding vitiligo. F1000Res. 2016;5:F1000 Faculty Rev-2234.
3. Katz Erica L., Harris John E. Translational Research in Vitiligo. Frontiers in Immunology, 2021, 12.

botir.saatov@mail.ru

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