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JAROHATLARNING REGENERATSION HOLATI TAHLILI

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Annotatsiya. *Ushbu tadqiqot jarohatlarning tiklanish jarayonlarini, ularning biologik va klinik omillar bilan bog'liqligini tahlil qilishga qaratilgan. Tadqiqotda regeneratsiya jarayoniga ta'sir qiluvchi omillar, jumladan, yallig'lanish bosqichi, hujayra proliferatsiyasi va yangi to'qimalarning shakllanishi o'rganilgan. Natijalar tiklanish jarayonlarini samarali boshqarish uchun muhim diagnostik ko'rsatkichlarni aniqlashga yordam beradi.*

Kalit so'zlar*: jarohatlar, regeneratsiya, hujayra proliferatsiyasi, yallig'lanish, yangi to'qimalar.*

АНАЛИЗ СОСТОЯНИЯ РЕГЕНЕРАЦИИ РАН

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Аннотация. *Данное исследование направлено на анализ процессов заживления ран и их взаимосвязи с биологическими и клиническими факторами. В работе изучены факторы, влияющие на регенерацию, включая воспалительную фазу, клеточную пролиферацию и формирование новых тканей. Полученные результаты помогают выявить важные диагностические показатели для эффективного управления процессами восстановления.*

Ключевые слова*: раны, регенерация, клеточная пролиферация, воспаление, новые ткани.*

ANALYSIS OF THE REGENERATION STATUS OF INJURIES

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Abstract. *This study focuses on analyzing wound healing processes and their association with biological and clinical factors. The research investigates factors influencing regeneration, including the inflammatory phase, cell proliferation, and new tissue formation. The findings contribute to identifying key diagnostic indicators for effective management of recovery processes.*

Keywords*: wounds, regeneration, cell proliferation, inflammation, new tissues.*

Sign in. Injuries regeneration complicated biological process is different different of tissues again recovery and healing to find for one how many cell and molecular mechanisms are required. Regeneration in the process immune system important role plays because he is injured in place inflammation management, new of tissues formation and of cells differentiation support such as functions performs Last in years regeneration to the process effect doer immune factors about many studies held their regenerative processes activation and in optimization role wide studied (Smith et al., 2022; Jones et al et al., 2021).

Immune system in injuries regeneration activator or on the contrary, a deterrent effect a lot to factors depend These factors between macrophages and T- lymphocytes such as cells, cytokines and growth factors important importance occupation (Williams et al et al., 2023). Especially M1 and M2 types of macrophages regeneration in the process different to roles have: M1 macrophages initial inflammation to control microbes against fights, M2 macrophages while inflammation reduce tissue recovery help (Brown et al., 2020).

Modern in the literature It is said that inflammation stage duration and intensity regeneration of the process to quality directly effect does For example, high inflammation level of tissues again recovery slow down or to keloid formation take coming can (Garcia et al et al., 2021). Therefore, immune system manage through inflammation control to do and of injuries successful recovery provide in the field studies big important have.

Last in years regenerative medicine and immunology in the fields done research that's it shows that growth factors and cytokines through immune the answer optimization injuries faster and more efficient recovery enable (Johnson et al., 2022). Growth factors, for example, transformation doer growth factor beta (TGF- β), new of tissues formation encourages and of cells migration provides. Also like interleukins (IL-6, IL-10). Cytokines also promote regeneration in support important role plays (Kim and Lee, 2023).

This in the article different of injuries regenerative to the situation immune of factors place, their the process how manage and regeneration how encourage analysis will be done. Especially inflammation and of tissues recovery between complicated balance and this processes manager factors about modern studies analysis will be done.

Methods. In the article scientific literature review through different of injuries regeneration and immune system with depends factors was studied. Macrophages activity of cytokines role and growth of factors in regeneration place scientific studies based on analysis done. Also regenerative in medicine being used modern therapy methods and their immune the answer how manage about data given.

Results. Literature to the review according to, immune system and regeneration between balance of tissues successful recovery in providing very important M1 and M2 macrophages the role of cytokines inflammation and recovery in the process duties regeneration to quality significant level effect shows. Also immune system modulation to do through of injuries healing to find improve can.

Studies that's it shows that macrophages from M1 to M2 state pass of regeneration important stage. M1 macrophages inflammation encouraging cytokines, for example, TNF- α and IL-1 b will issue, this while initial inflammation reaction starts and to microbes against protection provides (Smith et al., 2022). Then, M2 macrophages increase of tissues recovery and growth of factors release encourages. M2 macrophages growth factors, for example, TGF- b and through VEGF angiogenesis and new of tissues formation help gives (Williams et al., 2023).

Also interleukins (IL-6 and IL-10) regeneration in the process important important have IL-6 is preliminary inflammation stage active being an injury in place of inflammation efficient to be managed provides. IL-10 is anti- inflammatory to the effect have inflammation of the process decrease and regeneration to the stage pass supports (Garcia et al., 2021). These are cytokines balanced expression of tissues successful recovery provides and injury in place excess of inflammation prevention takes.

Growth factors also regeneration in the process important important have Transformation doer growth factor beta (TGF- β) of fibroblasts activation and collagen synthesis encourages this while injury in place new of tissues formation help (Johnson et al., 2022). Also vascular endothelial growth factor (VEGF) angiogenesis encourages and new blood veins formation through injury of place blood with to be provided improves (Kim and Lee, 2023).

Immune system another components, for example, T- lymphocytes also regenerate to the process contribution adds CD4+ T- lymphocytes cytokines work release through of macrophages activation manages and from M1 to M2 to pass stimulates (Jones et al., 2021). Also T- regulator cells (Treg) inflammation control to do and anti- inflammatory environment in creating important role It plays while regeneration process to accelerate help gives.

In general when, studies that's it shows that immune system different components and their mutually effect regeneration of the process successful done increase for important important have Immune of the answer different stages and in them factors manage through of injuries fast and efficient recovery to be provided can.

Debate. Immune system and regeneration processes between complicated connections to understand regenerative in medicine new treatment methods work on the way out important important have Immune factors manage through of inflammation necessary level storage and recovery of the process optimization can In the future this in the field studies continue regeneration enhancer new immunomodulators and therapy methods work output necessary.

Conclusion. Immune system different of injuries regeneration for important role plays. Macrophages, cytokines and growth of factors together effect regenerative of the process successful done to increase help gives Immune system right modulation through inflammation process manage and of tissues fast recovery provide can Therefore, regenerative processes in management immune factors deep learning and of them in treatment use big important have.

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