Applied Cell Biology

ISSN : 2320-1991 Online
ISSN : 2320-1983 Print
Volume 12 Issue 2
DOI: https://dx.doi.org/10.53043/2320-1991.acb12005

Research Article

Appl Cell Biol, 12(2), 2024 [23-27]
Published: September 27, 2024

Beneficial Health Effects of the Original Nexus Energy (O.N.E.) Technology

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ABSTRACT

In the present study the beneficial cellular effects of a new technology, named O.N.E. (Original Nexus Energy) technology, was investigated. An AJNA energy pendant jewelry in gold was used for the treatment of cultivated connective tissue fibroblasts. We examined the vitality, the basal metabolism and the regeneration process with and without the O.N.E. technology after a continuous treatment period up to 24 hours.

The vitality of connective tissue fibroblasts was significantly stimulated by the energy pendant jewelry by 16.3 ± 3.2% (mean value ± standard deviation; $p \leq 0.01$; $n = 4$) when compared with the untreated control. However, the basal metabolism of the connective tissue fibroblasts was stimulated even more by 30.3 ± 6.9% (mean value ± standard deviation; $p \leq 0.01$; $n = 4$). The results demonstrate that the cellular activity level was considerably improved by use of the O.N.E. technology. The regeneration of connective tissue fibroblasts was also stimulated by the energy pendant jewelry when compared with the untreated control. The totally colonized area after 20 hours was 93.1 ± 4.6% (mean value ± standard deviation; $n = 3$) for the cell cultures exposed to the energy pendant jewelry, whereas this area was only 75.7 ± 11.7% (mean value ± standard deviation; $n = 3$) for control cell cultures. The difference was statistically significant ($p \leq 0.05$).

Our studies with connective tissue fibroblasts have demonstrated that the AJNA energy pendant jewelry with the O.N.E. technology improves the basal energy level/cellular activity such as vitality and basal cell metabolism as well as the regenerative potential. Thus, the use of the O.N.E. technology might improve and maintain the individual attitude of life, well-being and systemic health.

Keywords

O.N.E. technology
Connective tissue fibroblasts
Metabolism
Vitality
Regeneration
Tissue repair
Well-being
Health

INTRODUCTION

Cell metabolism is a fundamental process that plays an essential role in maintaining vitality and overall health in the body. Within the complex network of cells, various metabolic pathways work together to produce energy, synthesize essential molecules, and regulate cellular functions. One specialized cell type is the connective tissue fibroblast, a type of cell that is responsible for maintaining the structural integrity of tissues and organs [1,2]. The metabolic activity of fibroblasts is of major importance for maintaining the health and function of connective tissues throughout the body. By producing energy through processes such as glycolysis and oxidative phosphorylation, fibroblasts ensure that tissues have the resources for repair and regeneration.

Additionally, fibroblasts are also involved in the synthesis of collagen and other extracellular matrix components, which are a prerequisite for tissue repair and maintenance [3]. Upon injury, fibroblasts proliferate and migrate to the site of damage, where they facilitate the repair process [4,5]. Fibroblasts also play a role by secreting growth factors and

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cytokines that regulate cellular activities such as proliferation, differentiation, and inflammation [6-8]. In summary, fibroblasts are vital components of connective tissue, promoting both its mechanical properties and its ability to respond to injury and maintain tissue health.

In the present study the beneficial cellular effects of a new technology, named O.N.E. (Original Nexus Energy) technology, was investigated. An AJNA energy pendant jewelry in gold with this technology was used for the treatment of cultivated connective tissue fibroblasts.

MATERIALS AND METHODS

O.N.E. (Original Nexus Energy) technology

The O.N.E. (Original Nexus Energy) technology is based on the development of an innovative mineral powder. This powder is obtained through a complex process involving multiple stages of treatment. These treatments include exposure to specific and carefully controlled conditions to modify the structure of the material. The powder also undergoes physical and chemical modifications to achieve a precise composition. Advanced techniques are used to manipulate the microscopic properties of the powder. Each step of the process is designed to ensure the consistency and quality of the final product. The technology relies on in-depth knowledge of material science. As a result, the resulting powder possesses unique characteristics, the outcome of this sophisticated process. An AJNA energy pendant jewelry in gold with O.N.E. technology was kindly provided by Polaris, F-13290 Aix en Provence, France, for the duration of the experiments.

Cell culture

The studies were performed with connective tissue fibroblasts (cell line L-929, ACC-2; Leibniz Institute DSMZ, Braunschweig, Germany). The cells were routinely cultured as mass cultures in RPMI 1640 medium supplemented with 10% growth mixture (FBS) and 0.5% gentamycin in an incubator at 37°C and an atmosphere of 5% CO_2 and 95% air at 95% humidity. Cells were subcultured twice a week.

Examination of vitality and basal metabolism of connective tissue fibroblasts

For the experiments, cells from 80 to 90% confluent mass cultures were seeded in 96-well culture plates (200 µl culture medium/well) at a cell density of 50,000 cells/well and incubated for 24 hours until the cells were completely attached and spread. The cell cultures were placed beneath the energy pendant jewelry and continuously incubated for another 24 hours in a mini-incubator at 37°C (Figure 1). The untreated control cultures were simultaneously placed in another mini-incubator at 37°C about 20 meters distance and isolated by various thick house walls to avoid any unwanted interactions.

To examine cell vitality and proliferation, a reaction mixture consisting of culture medium and the tetrazolium dye XTT (2,3-bis-(2-methoxy-4-nitro-5-sulfophenyl)-2H-tetrazolium-5-carboxanilide; Xenometrix, Allschwil, Switzerland) was added to the cells. The XTT test is based on the cleavage of the yellow tetrazolium salt to form an orange water soluble formazan product by dehydrogenase activity in the active mitochondria. A decrease in number of living cells

Figure 1: Experimental setup showing a 96-well plate placed in the mini-incubator with cultured connective tissue fibroblasts and the AJNA energy pendant jewelry in gold with O.N.E. technology on top. By using this setup, the beneficial effect of the O.N.E. technology on cell vitality and basal cell metabolism was investigated.

results in a decrease in the overall activity of mitochondrial dehydrogenases in the sample [9-12]. The optical density was measured as a difference measurement ΔOD = 450-690 nm at definite time points by an Elisareader (BioTek ELx808 with software Gen 5 version 3.00) and analyzed using Microsoft Excel. Four independent experiments with at least four replicate wells per experiment were performed (n=4).

To examine the basal cell metabolism, a reaction mixture consisting of phosphate buffered saline with 10 mM glucose as an energy source and the tetrazolium dye WST-1 (Sigma-Aldrich, Taufkirchen, Germany) was added to the cells. The cleavage of the dye is directly proportional to the mitochondrial dehydrogenases activity and the basal energy metabolism [13-15]. Finally, the optical density was measured as a difference measurement ΔOD = 450-690 nm at definite time points by an Elisareader (BioTek ELx808 with software Gen 5 version 3.00) and analyzed using Microsoft Excel. Four independent experiments with at least four replicate wells per experiment were performed (n=4).

Examination of regeneration of connective tissue fibroblasts

Connective tissue fibroblasts were seeded at a density of 100,000 cells/ml into the four compartments of a silicone frame (4 well-culture inserts; ibidi, Gräfelfing, Germany). The individual compartments are separated from each other by a 500 µm thick silicone bar. The silicone frame adheres firmly to the bottom of a culture dish and forms a definite cell-free area that the cells can colonize by proliferation and migration after the frame has been removed.

After reaching confluency within 48 hours after cell seeding, the silicone frames were removed with tweezers. A sharp wound edge was obtained between the four compartments of the frame. Immediately after removing the silicone frame, the cell cultures were exposed to the O.N.E. technology jewelry using a mini-incubator at 37°C. The untreated control cultures were simultaneously placed in another mini-incubator at 37°C about 20 meter distance and isolated by various thick house walls to avoid any unwanted interactions.

After a regeneration time of 20 hours, the cells were washed with phosphate buffered saline, fixed with methanol p.a., stained with Giemsa methylene blue solution and air-dried. The width of the remaining cell-free area was documented micrographically under the microscope of at least 4 points per cell culture. Analysis of the data was done using a software with artificial intelligence (Ikosa AI, KML Vision, Graz, Austria). A total of three independent experiments with duplicate wells was performed (n=3). In addition, a time-lapse video series was produced to visualize the coloniziation of the cell-free area with and without the AJNA energy pendant jewelry dynamically.

STATISTICAL ANALYSIS

Statistical analysis was done using the parameter-free two-tailed Wilcoxon-Mann-Whitney rank sum test.

RESULTS

The vitality of connective tissue fibroblasts was significantly stimulated by the energy pendant jewelry by 16.3 ± 3.2% (mean value ± standard deviation; $p \leq 0.01$) when compared with the untreated control. However, the basal metabolism of the connective tissue fibroblasts was stimulated even more by 30.3 ± 6.9% (mean value ± standard deviation; $p \leq 0.01$). The results demonstrate that the cellular activity level was considerably improved by use of the energy pendant jewelry.

The regeneration of connective tissue fibroblasts was stimulated by the AJNA energy pendant jewelry when compared with the untreated control. The totally colonized area after 20 hours was 93.1 ± 4.6% (mean value ± standard deviation) for the cell cultures exposed to the energy pendant jewelry, whereas this area was only 75.7 ± 11.7% (mean value ± standard deviation) for control cell cultures. The difference was statistically significant ($p \leq 0.05$). For a visualization of the dynamics of the regeneration process, see Figure 2.

DISCUSSION

Connective tissue fibroblasts play a crucial role in the maintenance and homeostasis of connective tissue integrity and function throughout the body [6,7]. These specialized cells are primarily responsible for the synthesis and remodeling of the extracellular matrix, which provides structural support and biochemical signaling to surrounding cells. The metabolic activity of fibroblasts is central to their function, influencing tissue repair, inflammation and the overall health state of connective tissues. Their ability to adapt metabolically allows them to perform essential functions in extracellular matrix synthesis and remodeling, while also presenting challenges when their activity becomes dysregulated. In response to injury or inflammation, fibroblasts become activated, exhibiting increased metabolic activity [1,4]. This activation is characterized by enhanced proliferation and the upregulation of extracellular matrix production, which is a prerequisite for wound healing and tissue regeneration [2,3].

The multifaceted process of wound healing can be broadly divided into four overlapping phases: haemostasis, inflammation, proliferation, and remodelling. In the *in vitro*

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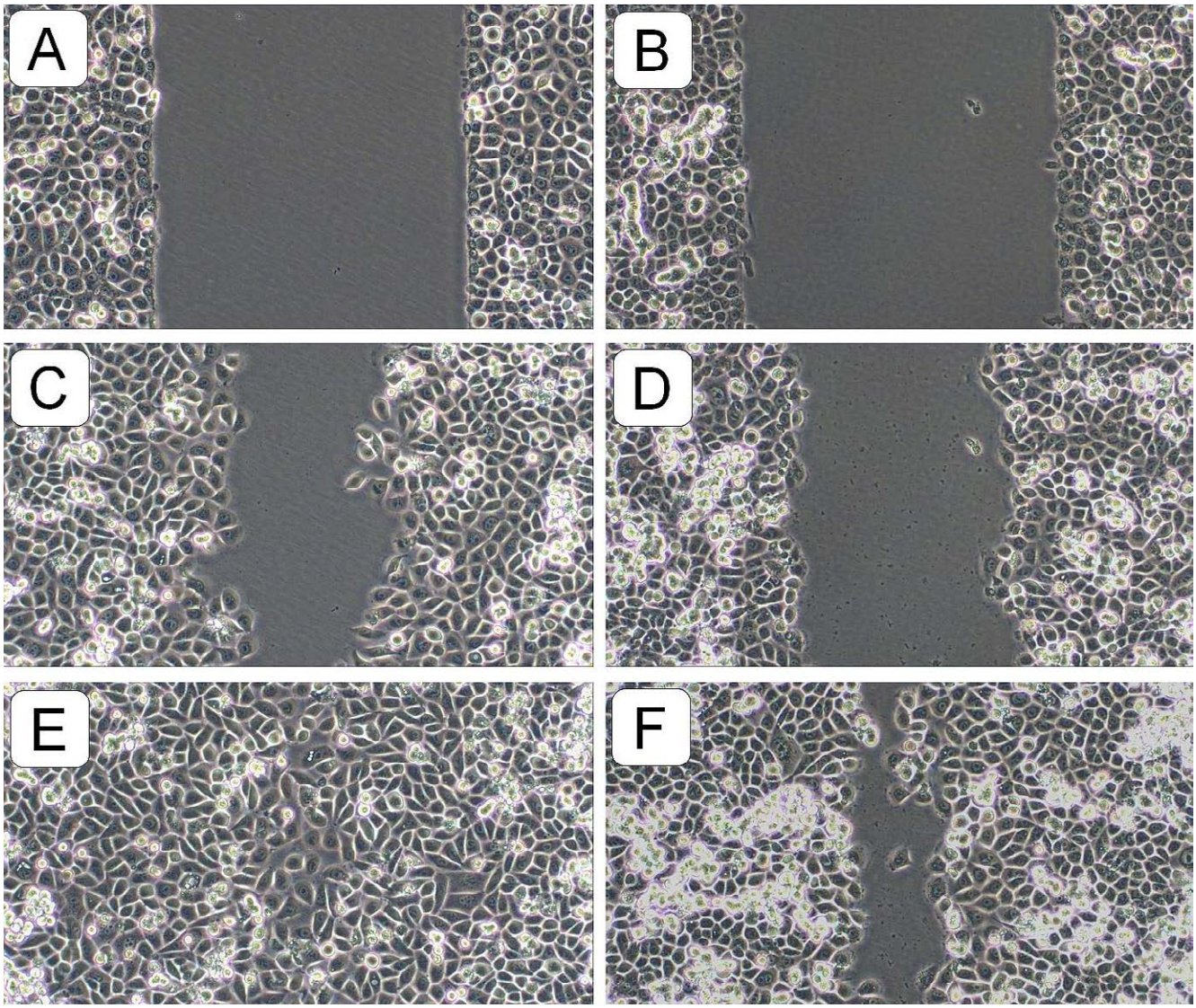

Figure 2: Single micrographs from a time-lapse video series visualizing the dynamics of the regeneration process of connective tissue fibroblasts directly after removing the silicone frame (A,B) and after 8 hours (C,D) and 16 hours (E,F). The left picture column (A,C,E) shows the cells treated with the AJNA energy pendant jewelry in gold with O.N.E. technology and the right picture column (B,D,F) shows the untreated control. It is clearly visible that the closure of the cell-free area by cell migration and proliferation takes place earlier in the case of the AJNA energy pendant jewelry in gold with O.N.E. technology. Olympus IX 50 inverted microscope equipped with a Basler acA 1920-150uc digital camera at phase contrast.

model used here, we simulated the proliferation phase, which is characterized by the formation of new tissue. Connective tissue fibroblasts migrate and proliferate into the denuded/wounded area and synthesize collagen and extracellular matrix, providing structural support and accelerating the regeneration process [5-7].

Our results presented here have demonstrated that the O.N.E. technology is able to promote the described physiological functions of connective tissue fibroblasts, namly basal cell metabolism, vitality and the wound healing/regeneration process in a significant manner when compared with untreated controls. The stimulation of vitality by 16% was moderate, but significant, in comparison to untreated control. However, cell vitality refers to the overall health and functional capacity of cells within an organism. It is a critical aspect of biological systems, as the vitality of cells directly impacts tissue function, organ health, and overall well-being. Maintaining high cell vitality is essential for processes such as growth, repair, and regeneration. Healthy cells exhibit optimal metabolic activity, efficient energy production, and

robust responses to environmental changes. One essential aspect of cell vitality, namly the basal cell metabolism of connective tissue fibroblasts, was increased by more than 30% in comparison to untreated control. This overall increase in cellular vitality also increased the regeneration of the cells by the O.N.E. technology significantly.

In summary, our studies with connective tissue fibroblasts have shown that the use of the O.N.E. technology jewelry improves the basal energy level/cellular activity such as vitality and basal cell metabolism as well as the regenerative potential. Thus, the use of the AJNA energy pendant jewelry with O.N.E. technology might improve and maintain the individual attitude of life, systemic health and well-being.

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