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Letter to the Editor

Use of eggshell membranes in regenerative medicine: A brief bibliometric analysis

Uso de membranas de cáscara de huevo en medicina regenerativa: Un breve análisis bibliométrico

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Dear Editor:

Diseases of internal and superficial tissues are becoming a global health challenge [1]. The World Health Organization (WHO) reports that diseases such as osteoarthritis have increased by 113%, and 1.8 billion people face dermatological problems at some point in their lives [2][3]. In this sense, eggshell membranes, recognized for their regenerative properties, are emerging as a promising biomaterial in medicine [4]. This membrane, composed primarily of keratin, collagen, and elastin, promotes elasticity and tissue regeneration [5].

Its natural origin ensures high compatibility with living tissues, while its anti-inflammatory and antioxidant properties enhance the healing process [6]. Recent research in animal models has shown that its direct application to open wounds increases the effectiveness of the treatment by 25% compared to conventional methods [7].

On the other hand, regenerative medicine, also known as tissue engineering, focuses on restoring, repairing, or replacing damaged tissues and organs using advanced technologies such as stem cells, specialized biomaterials, and gene therapies [8]. Its main purpose is to recover the normal functions of the human body by stimulating natural regeneration processes [9]. This discipline promotes the development of innovative treatments aimed at addressing chronic diseases, complex injuries, and degenerative conditions. By offering more effective therapeutic alternatives, regenerative medicine not only significantly improves the quality of life of patients, but also broadens horizons in the field of biomedical research [10].

The integration of eggshell membranes with regenerative medicine represents an innovative and sustainable proposal, transforming a common byproduct into a resource with potential for advanced therapies. This approach not only promotes the reuse of materials but also drives the development of accessible and effective solutions for tissue regeneration [11].

According to the Scopus and PubMed databases, considered relevant and prestigious in the scientific community [12][13], an emphasis was found on ten main topics, in order of frequency: Medicine, Materials Science, Engineering, Biochemistry, Genetics and Molecular Biology, Chemistry, Pharmacology, Toxicology, Pharmacy, and Health Professions. The bibliometric analysis of the use of eggshell membranes in regenerative medicine from 2004 to 2024 yielded 100 publications, primarily consisting of original articles and reviews. The most frequently used keywords were "eggshell membrane," "controlled study," "human," "wound healing," and "biocompatibility" (Figure 1).

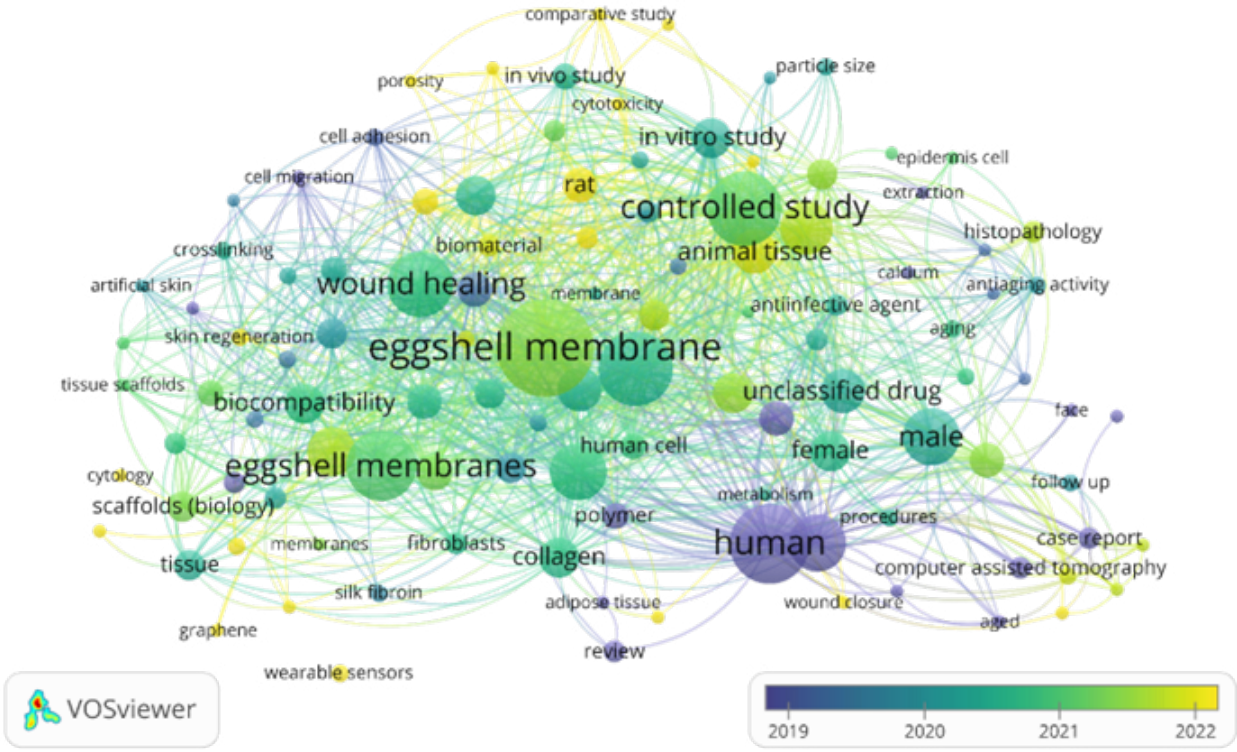

Figure 1. Keywords co-ocurrence.

Therefore, the use of eggshell membranes has been essential in aspects of practical medicine. Identifying knowledge gaps is essential to promote future research and improve the inclusivity and depth of critical areas identified in the current literature. This warrants attention to aspects that guarantee approaches to investigating the properties of this biomaterial in regenerative treatments.

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