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Role of lyophilized platelet-rich plasma in lung disorders

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The global burden of lung diseases is increasing steadily, with developed countries showing increasing trends in tobacco- and pollution-associated lung dysfunction, while developing countries are grappling with infectious conditions such as tuberculosis. Irrespective of the type of lung disease-obstructive, circulatory, malignant, infectious, etc. The pathogenesis ultimately leads to scarring of lung tissue, structural changes, loss of cells, and circulatory disturbances in the lungs, all of which have long-term effects on the quality of life of the affected individual. Therefore, the need of the hour is not just strategies that help control progression of the disease, but also those that help in regeneration of damaged tissues. Regenerative medicine and cell-based therapies are being researched in the management of several acute and chronic conditions. One such therapeutic modality is the use of platelet concentrates. Platelets have a complex biology that have been shown to play an important role in inflammation and tissue repair, in addition to blood clotting. The various growth factors in platelet concentrate play roles in chemotaxis, cell differentiation, extracellular matrix remodeling, angiogenesis, and tissue repair among other functions. In context of lung diseases, platelet concentrates (particularly plateletrich plasma [PRP]) can reduce alveolar as well as systemic inflammation, thereby preventing progression of the infection. PRP has been shown to decrease the expression and production of pro-inflammatory cytokines, improve blood supply, enhance pulmonary oxygenation, reduce fibrosis, among other effects, all of which aid in regeneration of cells and tissues in lung diseases.

Lyophilization of PRP is a consistent method for product standardization and fabrication of an off-the-shelf product with improved stability, which is ready for future uses. In this presentation, I will explain the advantages of PRP in pulmonary regeneration and highlight the advantages of lyophilized PRP in the management of various lung disorders including COVID-19.

Biography

Pradeep Mahajan is the regenerative medicine researcher and founder of StemRx Bioscience Solutions. He is one of the leading transplant surgeonsacross the globe. Dr. P. V. Mahajan is a Graduate of SRTC Medical College from Marathawada University with laurels of two gold medals; Master in Surgery (MS) from Marathawada University, Diploma in Urology from Vienna University, Austria, member of American Medical Society as well as many other academic and professional Medical Institutes.