



Pharmaceutical approaches for targeting microenvironment components in lung cancer

Saba Talebian¹, Fatemeh B. Rassouli^{1,2*}

¹Department of Biology, Faculty of Science, Ferdowsi University of Mashhad, Mashhad, Iran

² Novel Diagnostics and Therapeutics Research Group, Institute of Biotechnology, Ferdowsi University of Mashhad, Mashhad, Iran

Corresponding author's e-mail: behnam3260@um.ac.ir

Introduction: In spite of recent breakthroughs in treatment and management of lung carcinoma, this malignancy is still one of the most causes of cancer-related death worldwide. Similar to many kinds of carcinoma, tumor microenvironment has a significant contribution in progression and metastasis of lung cancer. Accordingly, great deal of investigation has focused on the development of pharmacological therapies that disrupt cellular assistance from the tumor microenvironment.

Methods: Number of recent review articles included key words *tumor microenvironment*, *lung cancer cell*, and *therapeutic targeting* were extracted in databases Web of Science, PubMed and Scopus.

Results: List of pharmaceutical agents that target various components of tumor microenvironment is extending by growing body of investigation. For instance, nintedinab is a multikinase receptor inhibitor that specifically inhibit cancer associated fibroblasts via disrupting their TGF β -dependent activation, and thus represses lung cancer progression. In addition, CBP501 suppresses production of interleukins 6 and 10, as well as tumor necrosis factor, by macrophages that result in decline of tumor initiation ability and metastatic potential of lung cancer cells. Another example is apatinib that decreases macrophage-induced epithelial to mesenchymal transition of lung cancer cells by blockage of hepatocyte growth factor.

Conclusion: Recent studies suggest that targeting microenvironment components, including fibroblasts and macrophages, by pharmaceutical interventions might have therapeutic value for lung cancer patients diagnosed at early stages, or even with progressed disease.

Key words: Lung cancer, Tumor microenvironment, Pharmaceutical approaches