

عنوان مقاله:

In search of elixir: Pharmacological agents against stem cell senescence

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نویسندگان:

Hourieh Tousian - *Vice-chancellery of Food and Drug, Shahroud University of Medical Sciences, Shahroud, Iran*

Bibi Marjan Razavi - *Targeted Drug Delivery Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran*

Hossein Hosseinzadeh - *Pharmaceutical Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran*

خلاصه مقاله:

Stem cell senescence causes different complications. In addition to the aging phenomenon, stem cell senescence has been investigated in various concepts such as cancer, adverse drug effects, and as a limiting factor in cell therapy. This manuscript examines protective medicines and supplements which are capable of hindering stem cell senescence. We searched the databases such as EMBASE, PubMed, and Web of Science with the keywords "stem cell," "progenitor cell," "satellite," "senescence" and excluded the keywords "cancer," "tumor," "malignancy" and "carcinoma" until June ۲۰۲۰. Among these results, we chose ۴۷ relevant studies. Our investigation indicates that most of these studies examined endothelial progenitor cells, hematopoietic stem cells, mesenchymal stem cells, adipose-derived stem cells, and a few others were about less-discussed types of stem cells such as cardiac stem cells, myeloblasts, and induced pluripotent stem cells. From another aspect, ۱۷β-Estradiol, melatonin, metformin, rapamycin, coenzyme Q₁₀, N-acetyl cysteine, and vitamin C were the most studied agents, while the main protective mechanism was through telomerase activity enhancement or oxidative damage ablation. Although many of these studies are in vitro, they are still worthwhile. Stem cell senescence in the in vitro expansion stage is an essential concern in clinical procedures of cell therapy. Moreover, in vitro studies are the first step for further in vivo and clinical studies. It is noteworthy to mention the fact that these protective agents have been used in the clinical setting for various purposes for a long time. Given that, we only need to examine their systemic anti-senescence effects and effective dosages

کلمات کلیدی:

Cellular senescence, Endothelial progenitor cells, Induced pluripotent stem cells, Melatonin, Mesenchymal stem cells, Telomerase

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