

EFFECT OF AUTOPHAGY MODULATORS ON CARDIAC AGING IN MOUSE MODELS STUDIES: A SYSTEMATIC REVIEW

BFHA
2020

Sulić P¹, Ahmić H¹, Maleš P¹, Vujević L¹, Pašić H¹, Sedlić F²



EU
2020
HOR

¹School of Medicine, University of Zagreb

²Department of pathophysiology, University of Zagreb School of Medicine

Background

The prevalence of cardiac diseases is increasing with constantly growing elderly population. Disorders of autophagy, a lysosomal degradation process, have been suggested to have an important role in aging. This review aims to provide information about the effects of recognized autophagy modulators on cardiac aging in mouse model studies.

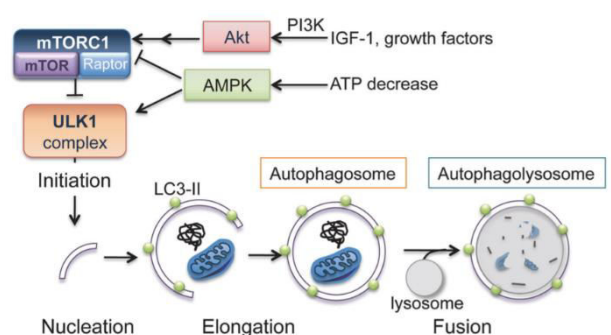
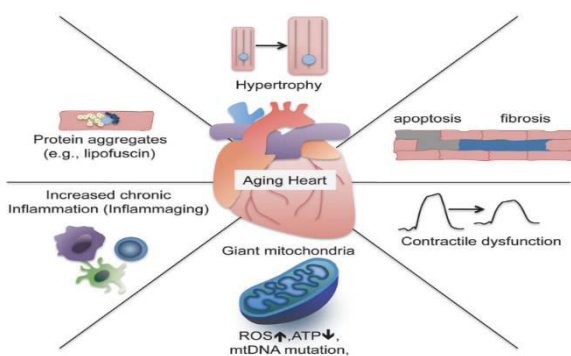
Material & Methods

Pubmed search was done on February 8, 2020 for all existing publications, using medical subject heading terms („aging“; „autophagy“; „heart“; „mice“) and text words („aging“; „autophagy“; „heart“; „mice“). Publications were selected for inclusion if they studied the effect of autophagy on the aging heart, using genetic or external/pharmacological modulations of autophagy.

Results

Full-text screening showed the beneficial or potentially beneficial role of autophagy inducers. These were rapamycin, AICAR, spermidine, oleate, and high-intensity exercise stress that targeted autophagy-related

molecules, mTOR, Beclin-1, ALDH2, AMPK, FOXO, and NRF2. On the other hand, fasting in old mice, caloric restriction in young mice, and palmitate showed a detrimental effect on autophagy.



Conclusion

Beneficial effects of autophagy are exerted by reducing aging-induced contractile dysfunction, slowing down the aging process, and improving health

Since these studies suggest that autophagy has an important role in aging, it represents a potentially good target for reducing age-related cardiac dysfunction.