

THE EFFECT OF mTOR AND RELATED SIGNALING PATHWAY ON AGEING IN BIRDS - A REVIEW

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An organism's lifespan is governed by the mechanistic target of rapamycin (mTOR) and insulin-like insulin growth factor signaling (IIS) pathways. This review seeks to explore the influence of mTOR and its related signaling pathways on the ageing process in avian species. In birds, this pathway plays a crucial role in regulating physiological effects, longevity, and the ageing phenomenon. Both rapamycin and dietary restrictions have demonstrated the ability to inhibit mTOR, leading to an extension of the maximum lifespan in model organisms. Ageing is characterized by a gradual decline in physiological function, impacting overall performance, increasing susceptibility to death, and diminishing life expectancy. Addressing this issue through mTOR inhibition via dietary restriction and rapamycin administration, as observed in model organisms, presents a potential solution. Despite similarities, a physiological paradox exists between mammals and birds. Additionally, it is reasonable to infer significant differences in the physiological systems of birds compared to mammals. Variations in how sexes allocate resources to different aspects of reproduction can contribute to differences in longevity and ageing, driven by trade-offs in life history. Despite the limited research conducted on birds ageing, the potential impact of mTOR modulation through interventions remains an intriguing area for further exploration.