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Longevity promoting efficacies of different plant extracts in lower model organisms

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Highlights

- Potential of plant extracts to impart longevity in lower model organisms
- Major mechanisms operating: insulin like growth factor (IGF) signaling pathway, antioxidant defense mechanisms
- Knowing the altered pathways helps to provide drug target for natural anti-aging interventions

Abstract

Past investigations have shown that various plant extracts are capable of promoting longevity in lower model organisms like *Caenorhabditis elegans*, *Drosophila melanogaster*, *Saccharomyces cerevisiae*, *Bombyx mori* etc. Longevity studies on such organisms provide a foundation to explore anti-aging efficacies of such plant extracts in higher organisms. Plant extracts of acai palm, apple, asparagus, blueberry, cinnamon, cocoa, *Damnacanthus*, maize, mistletoe, peach, pomegranate, *Rhodiola*, rose, *Sasa*, turmeric, and *Withania* have extended lifespan in lower model organisms via diverse mechanisms like insulin like growth factor (IGF) signaling pathway, and antioxidant defense mechanisms. Knowledge of pathways altered by the extracts can be investigated as potential drug-targets for natural anti-aging interventions. Thus, the aim of the review is to scrutinize longevity promoting efficacies of various plant extracts in lower model organisms.

Keywords: Aging · Lifespan · Plant extracts · *Drosophila melanogaster* · *Caenorhabditis elegans* · *Saccharomyces cerevisiae*

1. Introduction

Aging is a progressive phenomenon characterized by gradual decline in efficiency of the cellular machinery. Progressive aging leads to an array of age-related complications such as neurodegenerative disorders, diabetes, obesity, myopathies, cancers, inflammation etc (Fontana et al., 2010). Aging research has accelerated in the past decade with huge focus garnered on natural remedies to combat aging. Many

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