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Lauren F. Cook
Clemson University

Lindsay M. Grasso
Clemson University

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Royal Jelly Mediated Prolongevity and Anti-stress Functions in *C.elegans*

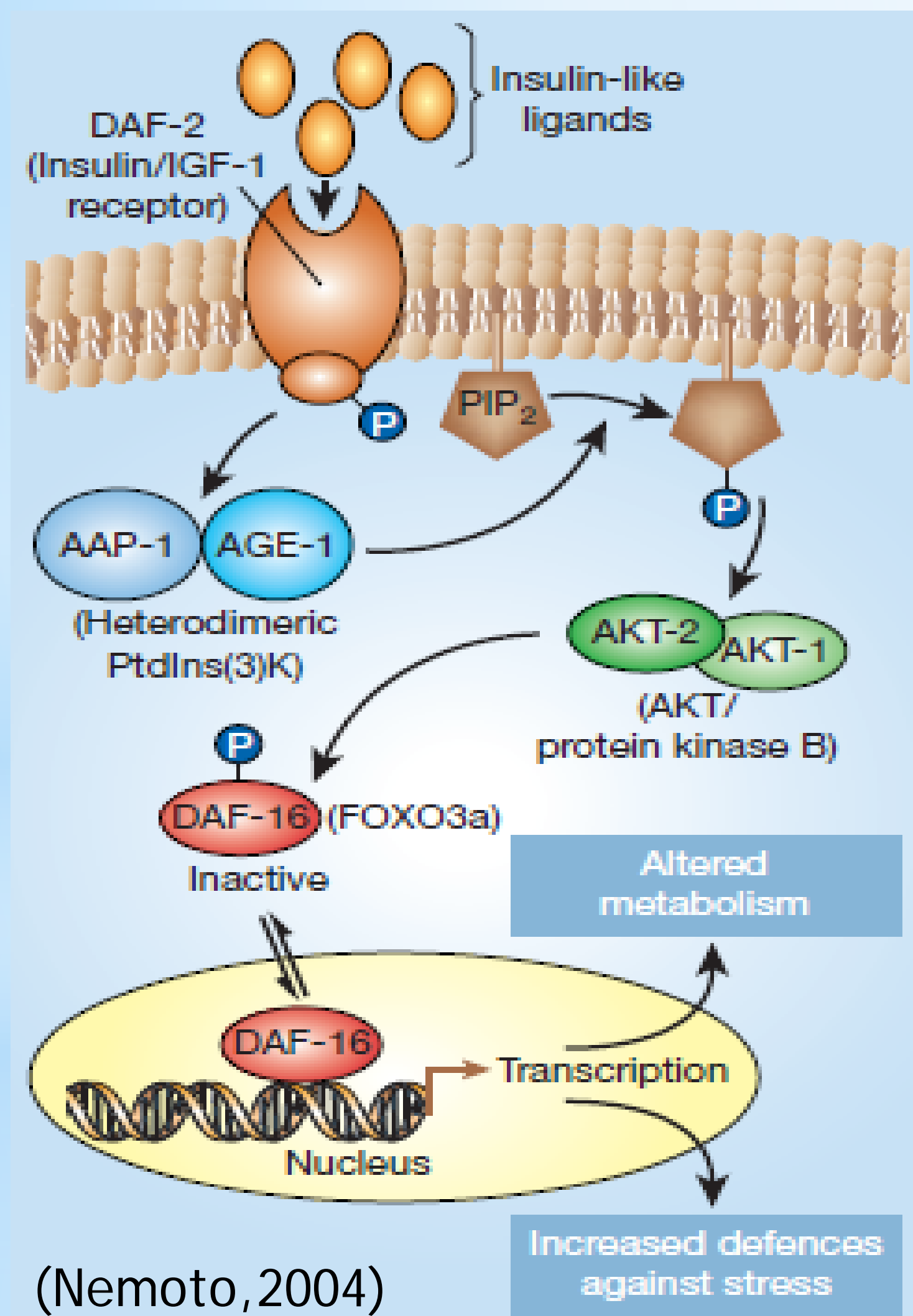


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Lauren F Cook, Lindsay M Grasso, Department of Biological Science, Clemson University

Introduction

Royal jelly is secreted from the glands in the hypopharynx of worker bees, which is used to feed larvae, as well as adult queens. The main composition of royal jelly includes proteins, carbohydrates, fatty acids, minerals and vitamins. Royal jelly has antibacterial effects, healing promoting effects on stomatitis, and can help people recover from tiredness and overwork. Moreover, royal jelly could stimulate and regenerate the nervous system, accelerating the healing and consolidation of fractured bones. In our study, we focus on whether royal jelly can extend lifespan and increase tolerance of several stresses, which might be beneficial to treatment of age-related disorders.



It is well known that the insulin pathway plays a key role in prolongevity. DAF-16 is an essential downstream component factor in this pathway and when it translocates in to the nucleus, it behaves as a key transcriptional factor that can increase the gene expression of several longevity and stress resistant genes.

As a result, the increase of DAF-16 activity could increase lifespan extension and stress resistant function. In our research, we also test whether royal jelly can increase the tolerance to several stresses such as oxidative stress and UV stress. Oxidative stress shows an imbalance between the systemic manifestation of reactive oxygen species and a biological system's ability to readily detoxify

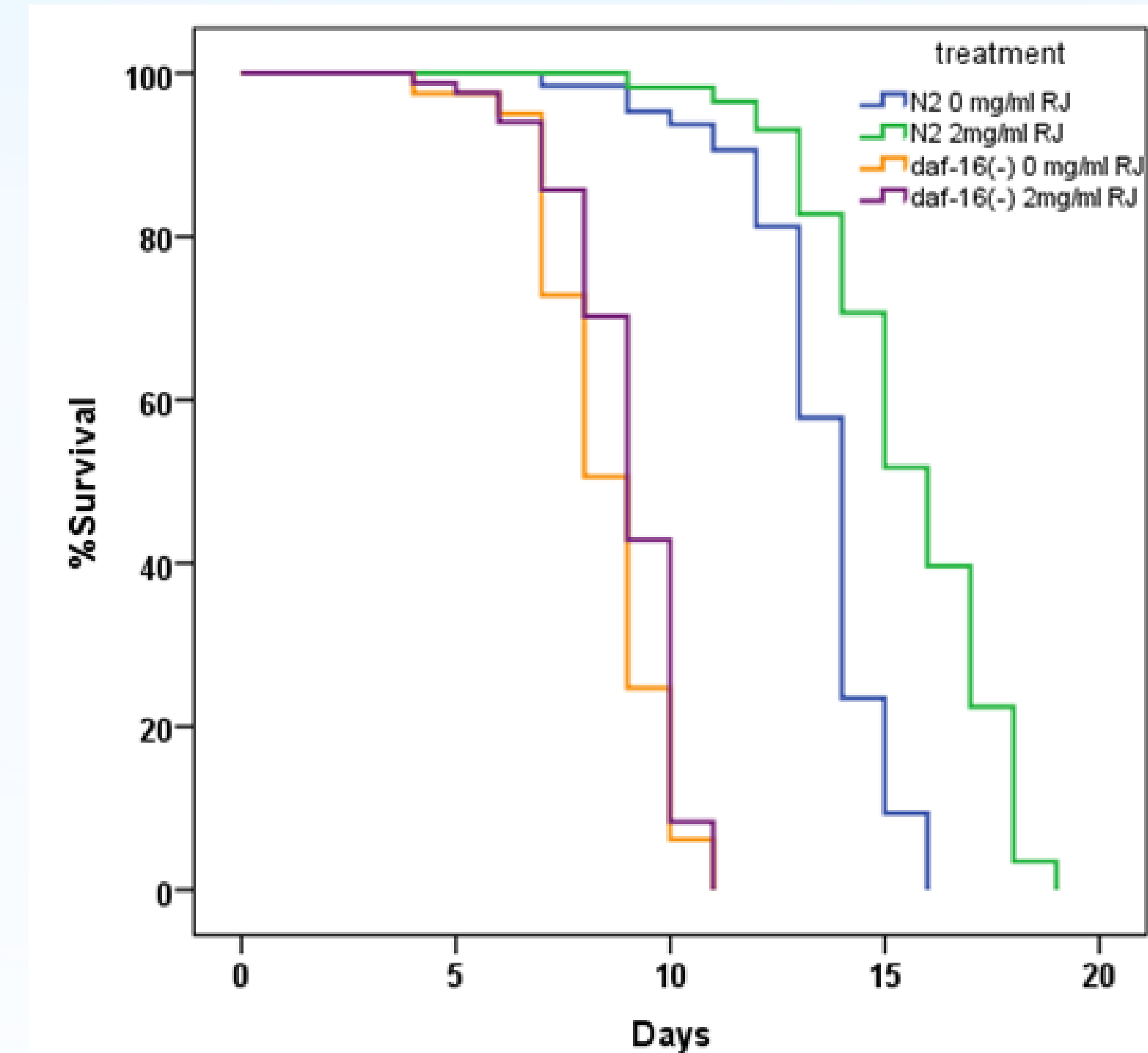
the reactive intermediates or to repair the damage. In regards to UV stress, UV light could damage DNA integrity, which could then increase the DNA damage and age-related disorders. Based on the previous research, we have known that oxidative stress and DNA damage could induce several age-related disorders, so we can use our model to test the mechanism of age-related disorders and determine how to slow down the development of the disorders.

References

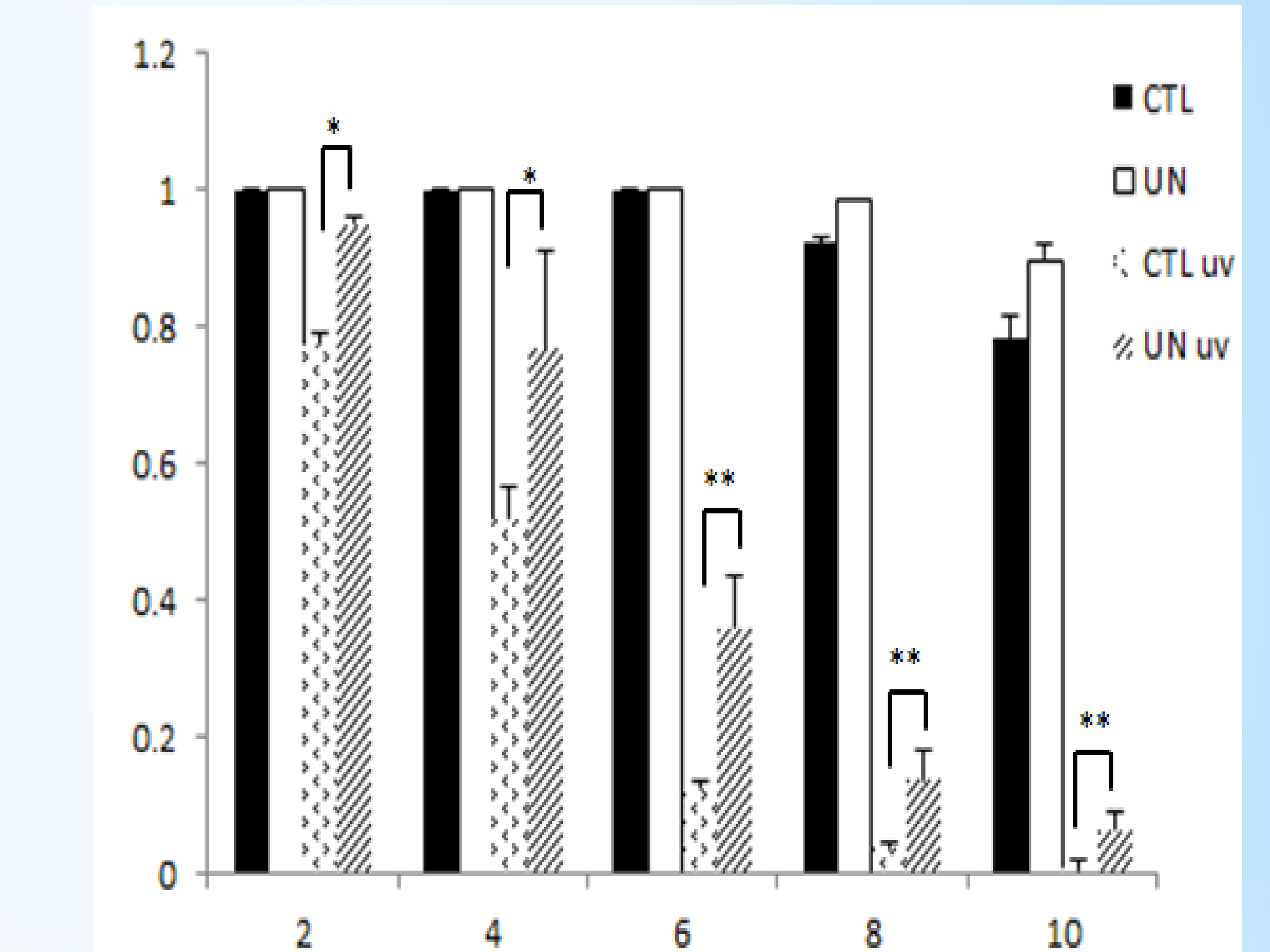
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Results and Conclusion

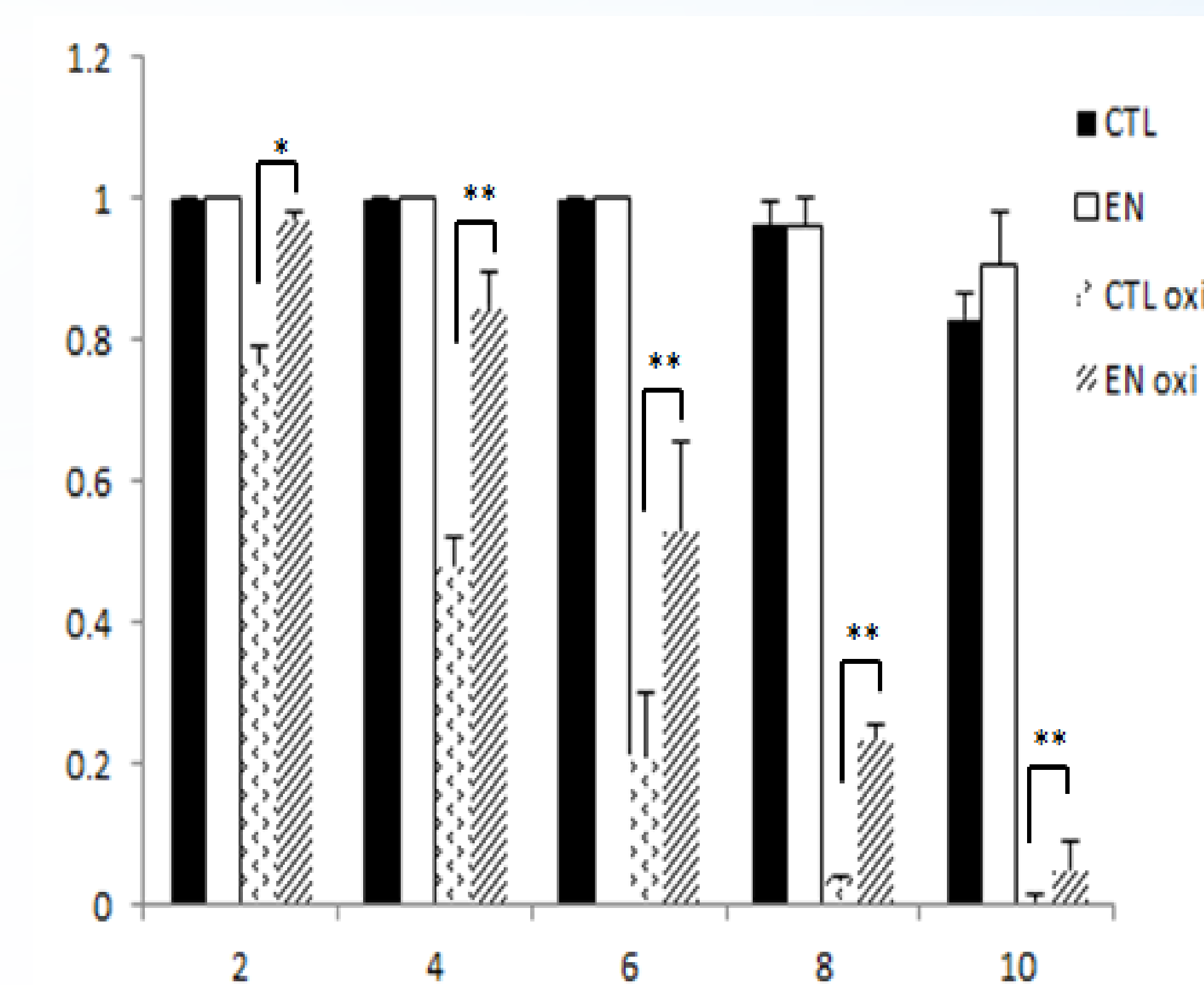
Royal Jelly could extend *C.elegans* lifespan Dependent on DAF-16



Royal Jelly Increase tolerance of *C.elegans* to UV stress



Royal Jelly Increase tolerance of *C.elegans* to oxidative stress



Future Plan

Our results showed that royal jelly has the beneficial effects for prolongevity and the underlying mechanism of royal jelly's action has been partially discovered. Considering that royal jelly may promote *C. elegans* stress responses to oxidative stress and UV irradiation, we will further work on whether royal jelly can protect genome stability from DNA damage, and test whether royal jelly can slow down the development of age-related disorders, such as Huntington's disease, Alzheimer's, and sarcopenia.

Acknowledgement

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