

Nutraceutical approach to increase healthy aging using *Caenorhabditis elegans* as a model organism

Pensotti R.¹, Sciandrone B.¹, Maiocchi J.¹, Palmioli A.¹, Airoidi C.¹, Regonesi M.E.¹

E-mail: r.pensotti1@campus.unimib.it

¹ Department of Biotechnology and Biosciences, University of Milano Bicocca, Piazza della Scienza 2, 20126 Milan (Italy).

Keywords: Aging, *Caenorhabditis elegans*, Nutrient, Healthspan

Abstract:

Humans are gradually moving towards an aging society. Aging is a process of gradual physiological decline and a risk factor for several pathologies¹. Understanding the mechanisms underlying aging is fundamental to promote healthy aging, even if it is complicated by its multifactorial nature, in which environmental factors (e.g. nutrients) play an important role^{2,3}.

In this project, the main aging phenotypes (healthspan parameters) will be correlated with the major known nutrient-sensitive signaling pathways in *Caenorhabditis elegans*, a validated model for aging research. The first results showed a progressive decline of movement during *C. elegans* lifespan since the early adulthood. Otherwise, the heat stress resistance decreases only in old age; suggesting that the two parameters do not seem to be related. In future, the other physiological phenotypes, i.e. reactive oxygen species accumulation, pumping rate and lipofuscin accumulation, will be assessed.

Given the important impact of diet on healthy aging, the effect of the *Cinnamomum cassia* bud extract on *C. elegans* lifespan and healthspan will be evaluated. The effective dose to assess cinnamon bud anti-aging properties was defined by heat stress test, pre-treating adult worms with a single dose for 48 hours. The presence of the most effective dose of the extract during *C. elegans* development led to an improvement in median lifespan, without affecting maximum lifespan. The next step will be the study of all the healthspan parameters in the presence of the extract.

References:

1. Huang, C., Xiong, C., & Kornfeld, K. (2004). Proceedings of the National Academy of Sciences, 101(21), 8084-8089.
2. Sun, X., Chen, W. D., & Wang, Y. D. (2017). Frontiers in pharmacology, 8, 548.
3. Okoro, N. O., Odiba, A. S., Osadebe, P. O., Omeje, E. O., Liao, G., Fang, W., ... & Wang, B. (2021). Molecules, 26(23), 7323.