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## Caloric restriction in marine calanoid copepods

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Many studies in animals have demonstrated the potential of dietary regimes to delay the rate of ageing. Despite exceptions and criticisms, this notion, generally known as caloric or food restriction, is accepted as a nearly universal paradigm, evolutionarily preserved to modulate the intrinsic rate of ageing among animals.

Our study provides the first evidence that caloric restriction, defined as a reduction in food consumption in comparison to satiation, may cause a change in copepod survival curves by lowering age-specific mortality rates and increasing life expectancy. The observed increase in copepod lifespan was coupled with an extended reproductive period. The additional reproduction during the prolonged lifespan under food-restricted conditions, however, was not able to reach even close to the total egg production realized under the shorter-lifespan, food-satiated conditions, likely due to the soma maintenance costs at low food availability.

The response to caloric restriction can be interpreted as an evolutionary strategy, one ensuring survival through periods of food shortage to give at least some offspring a chance for recruitment. Our results suggest that the patterns of senescence and mortality in copepod populations may be influenced by resource availability during their life cycle. Optimal allocation of resources, however, may change with age as a result of life history tradeoffs associated with changes in environmental conditions (i.e. food, predation risk) and reproductive, foraging and survival costs.

Keywords: copepod, ageing, food limitation, reproduction, life expectancy

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