



Figure 9.2 Effects of SkQ1 on the lifespan of *D. melanogaster* females at different temperatures. Original data were published in ref. 100 and 105.

9.5 Mitochondria-Targeted Antioxidants in Rodents

Lifespan extension by mitochondria-targeted rechargeable antioxidants was also documented for rodents.¹³⁴ SkQ1 was shown to extend the lifespan of female outbred mice kept under conditions close to natural in a conventional vivarium. In such a case the mice died mainly of various infections, the mortality being age-dependent due to the gradual lowering of immunity. The median lifespan in the control group was about 300 days, and was doubled by very low doses of SkQ1 (5 nmol SkQ1 kg⁻¹ per day), which greatly decreased the infection-related mortality. In the SkQ1-treated female mice mammary carcinomas, rather than infections, became the primary cause of death. Moreover, SkQ1 prevented the age-dependent disappearance of estrous cycles. The latter effect was observed for outbred mice in both the low-pathogen and the conventional vivaria. Mole-voles and dwarf hamsters kept under conditions close to natural also lived longer if treated with SkQ1.¹³⁴

Besides the lifespan extension, mitochondria-targeted rechargeable antioxidants were efficient in health span prolongation. SkQ1 was found to diminish the age-dependent fertility decline in spontaneously hypertensive rats (SHR). In particular, we found that in the SkQ1-treated group, 9 females of 10 became pregnant, but only 5 out of 10 animals were pregnant in the control group (N. A. Medvedeva, V. P. Skulachev, unpublished observation). Since both males and females obtained SkQ1 in these experiments, it is difficult to distinguish if the beneficial effect was caused by sperm quality improvement or by a direct influence of SkQ1 on the female organism. However, other experiments in mice revealed that SkQ1 ameliorates the age-dependent