The tardigrade *Ramazzottius varieornatus*: a model for astrobiological studies

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Tardigrades are tiny extremotolerant animals that can enter an ametabolic dry state called anhydrobiosis. During anhydrobiosis these organisms have high tolerance to a variety of extreme environmental conditions. This unique ability makes this group treated as potential model animals for astrobiological studies. However, studies on the environmental stress tolerance of the tardigrades that have been cultured are limited. This is possibly because rearing tardigrades is not trivial task and rather labourious. Here we report the first successful rearing of the herbivorous tardigrade, *Ramazzottius varieornatus*, by supplying a green alga *Chlorella vulgaris* as a food. The reared individuals of this species had an anhydrobiotic capacity throughout their life cycle, from eggs, to juveniles, and to adults. Reared adults, while in an anhydrobiotic state, were tolerant to temperatures -196C and 100C. Furthermore, they were shown to be tolerant to the exposure to 99.8% acetonitrile, 1 GPa of hydrostatic pressure, or 5000 Gy of ^{4}He ion radiation. We will report the details of these results, along with the description of their life history. Due to the observed tolerance to such extreme environmental conditions, we propose *R. varieornatus* to be included as a suitable model for astrobiological studies of multicellular organisms.