Abstract

The study of sexual reproductive behavior supported by ultrastructural evidence is important in rotifers to describe differences among potential cryptic species. In this research, the morphology of the rotifer Brachionus bidentatus is described at the ultrastructural level, using electronic microscopy, together with a brief description and discussion of its sexual reproductive behavior. The characteristics of the (a) male, (b) the female, (c) the sexual egg or cyst, (d) the partenogenic egg, (e) the no-fecundated sexual egg (male egg), and (f) the trophi, were described. Another part of this research is dedicated to the ultrastructure of the sex cells of the male rotifer B. bidentatus. Samples were obtained from La Punta pond in Cosio, Aguascalientes, Mexico (22°08' N - 102°24' W), and a culture was main- tained in the laboratory. Fifty organisms, from different stages of the rotifer Brachionus bidentatus, were fixed in Formol at 4% and then prepared; besides, for the trophi, 25 female rotifer Brachionus bidentatus were prepared for observation in a JEOL 5900 LV scanning electronic microscope. In addition, for the observation of male sex cells, 500 males of Brachionus bidentatus were isolated, fixed and observed in a JEOL 1010 transmission micro- scope. Females of B. bidentatus in laboratory cultures had a lifespan of five days (mean±one SD=4.69±0.48; N=13), and produced 4.5±3.67 (N=6) parthenogenetic eggs during such lifespan. In the case of non-fertilized sexual eggs, they produced up to 18 eggs (mean±one SD=13±4.93; N=7). Sexual females produced a single cyst on average (mean±one SD=1±0; N=20). For the sexual cycle, the time of copulation between male and female ranged from 10 to 40 seconds (mean±one SD=17.33±10.55, N=7). The spermatzoa are composed of a cellular body and a flagellum, the size of the body is of 300nm while the flagellum measures 1 700nm. The rods have a double membrane. Their mean length is almost 2.45m±0.74, N=6; and their mean wide is 0.773m±0.241, N=11. The evidence on the specific ultrastructural characteristics of the rotifer B. bidentatus is notorious, even more in the male and in the cyst cell. Regarding the ultrastructure of the spermatzoa and the rods, compared to other species they only differ in size, despite their structural resemblance. Our study of the ultrastructure of this species adds useful information that along with molecular data will help clarify the taxonomy of brachionid rotifers. Rev. Biol. Trop. 61 (4): 1737-1745. Epub 2013 December 01.

Keywords
Rotifer, Brachionus bidentatus, ultrastructure, rods, spermatozoon.