

El ciclo biológico del *Balantidium nawaraoi*

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Dear Editor, the recent description, for the first time in the Republic of Ecuador, of *Balantidium nawaraoi* (*Neobalantidium nawaraoi* or *Balantioides nawaraoi*) specifically in the province of Manabí, and a second discovery, also in 2025, but this time in the province of Cotopaxi, triggered an epidemiological alert to disseminate all relevant information on this new ciliate in humans so that the various stakeholders in the health system can better understand how to address this new intestinal parasitic problem (1,2).

Based on recent epidemiological information collected from infected patients in both Ecuador and Venezuela, the likely life cycle of this ciliate species has been possible to design.

The cycle begins with the ingestion of food contaminated by *Balantidium nawaraoi* cysts (Figure 1). These cysts travel down the esophagus and stomach, and the acidity and alkalinity that follow as they travel through the small intestine soften the outer cystic membrane, facilitating excystation, or the release of a trophozoite from the small intestine, which can subsequently colonize the lumen of the large intestine and appendix (Figure 2).

This motile, reproductive, vegetative form, or trophozoite, can divide itself transverse binary division (conjugation may occur) to give rise to two new trophozoites.

As feces continue their journey through the large intestine, they lose moisture, causing desiccation that stimulates or triggers the transformation of trophozoites

into cysts (encystment). These cysts, covered by a strong double outer membrane, are able to withstand desiccation, sunlight, changes in ambient temperature, and other environmental elements that would destroy the basic form of the trophozoite. The cysts survive for a long time (more than 10 days) until they are ingested again by a healthy host, thus beginning a new cycle. When feces are not properly disposed of and humans defecate in the backyard, this allows the arrival of mechanical vectors such as cockroaches, flies, and rodents (rats and mice) which can spread these cyst-contaminated feces to different corners of the house and even to nearby areas or homes in the community.

Another important epidemiological element is the behavior of backyard pigs, as reservoirs of this species, which can be infected with *Balantidium nawaraoi* cysts, develop the biological cycle in them and eliminate feces contaminated with cysts in the backyard. These, with the breeze or the transport of mechanical vectors, can carry the infectious evolutionary form (cysts) to food and through this or by inhalation, infect humans who live with these pigs.

To prevent transmission, it is essential to filter or boil water before consumption, wash and cook food thoroughly before eating, wash hands before cooking and before eating, and wash hands after defecating or upon returning from street.

Based on the data accumulated to date, it appears that the pig is the definitive domestic host of *Balantidium nawaraoi*, with humans being only an incidental host. Under conditions of immunosuppression or malnutrition, humans facilitate colonic colonization of *Balantidium nawaraoi* trophozoites. However, the possible involvement of other animal species, as possible sylvatic or peridomestic reservoirs of this enteroparasites, is still being investigated (1-3).

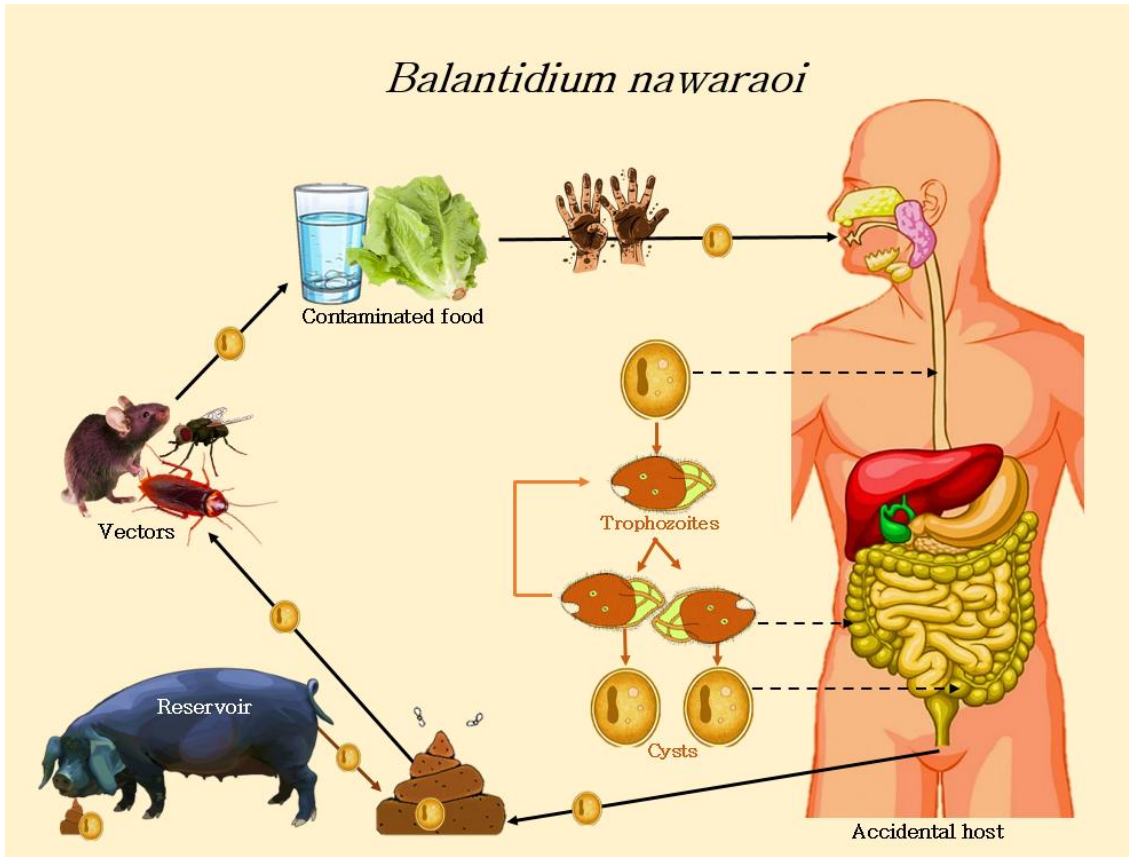


Figure 1. Life cycle of *Balantidium nawaraoi*. Source: author's photocomposition.

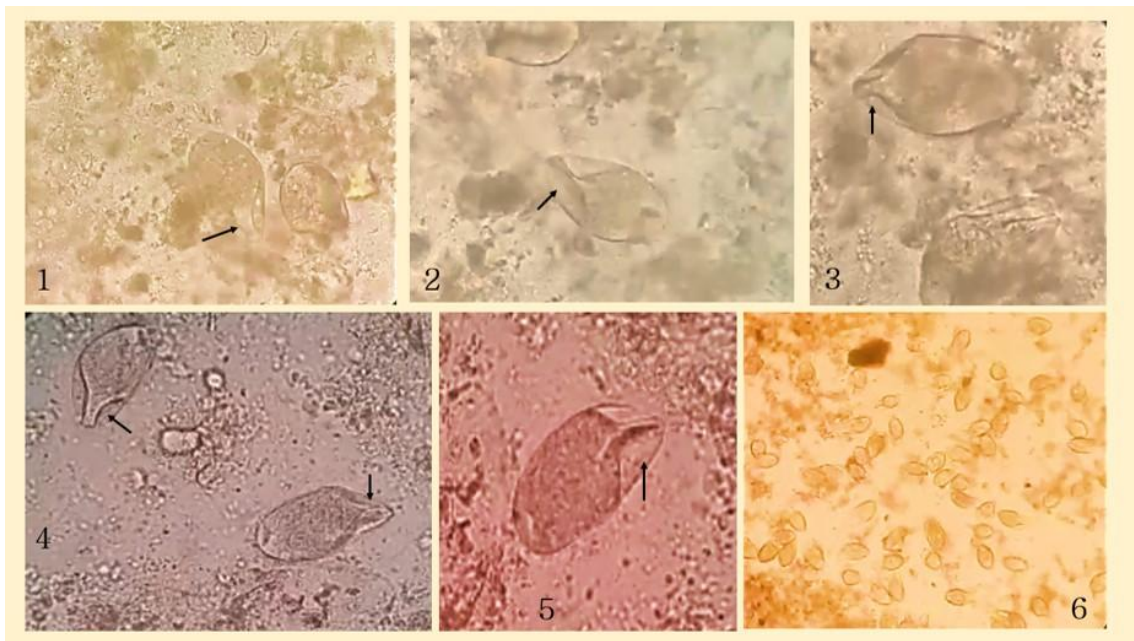


Figure 2. *Balantidium nawaraoi* trophozoites in saline solution. The posterior third of the corkscrew is indicated by arrows. Quadrants 1 to 5 are magnified with a 40X

objective; quadrant 6 is magnified with a 10X objective, with approximately 50 trophozoites per field. **Source:** Patients evaluated by the author.

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