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Wild coypu (*Myocastor coypus*) as sentinel of antimicrobial resistance in water ecosystems: preliminary insights using *Aeromonas* spp. as bioindicator

Content

This study investigates the potential role of wild coypu (*Myocastor coypus*) as a sentinel of antimicrobial resistance (AMR) in freshwater ecosystems, using *Aeromonas* spp. as bioindicator.

Between December 2024 and May 2025, 51 coypu carcasses and 13 water samples were collected along the Reno River and its tributaries in Italy. *Aeromonas* spp. were isolated and identified by MALDI-TOF. Their AMR profiles were determined using the broth microdilution method.

A total of 74 *Aeromonas* strains isolated from animals (57) and water (17) were detected, belonging to 7 different species. The most common were *A. veronii* (21/74) and *A. media* (19/74).

About 17.54% (10/57) of *Aeromonas* isolates from animal sources were resistant to at least one antimicrobial, most commonly sulphamethoxazole (8/57) and tetracycline (4/57). Only one *A. veronii* strain was multidrug-resistant (MDR) to sulphamethoxazole, tetracycline and gentamicin.

The number of resistant and MDR isolates, as well as the AMR profiles of *Aeromonas* strains of aquatic origin, were comparable to those of animal origin.

The ecological traits of wild coypu (semi-aquatic habits, wide distribution, sedentary behaviour and long lifespan), along with the strong similarity between AMR profiles of *Aeromonas* from animal and aquatic sources, suggest this species as an effective sentinel for AMR monitoring in aquatic environments and its potential use in future surveillance programs targeting freshwater ecosystems.

Keywords

Wild coypu, *Aeromonas* spp., aquatic environment

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