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Macrophyte life form influences accumulation of the antiparasitic drug ivermectin in wetlands

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Cattle grazing in a floodplain wetland in Santa Fe, Argentina. Wetlands used by livestock can receive veterinary pharmaceuticals such as ivermectin through cattle dung. Photo by M. Cecilia Berón (INALI CONICET-UNL).

Veterinary medicines used for livestock can reach nearby wetlands through cattle dung. One of the most common is ivermectin, a drug used to control parasites. Even at low levels, ivermectin can affect aquatic organisms. Wetland plants (macrophytes) and the epiphytic biofilms growing on them may act as temporary sinks and potential reservoirs for ivermectin's transfer through aquatic food webs, but little is known about how it accumulates in these compartments.

Researchers in Argentina used an outdoor mesocosm experiment—a controlled experimental setup that mimics a natural environment—to simulate ivermectin entering wetlands through cattle dung. They compared the rooted emergent *Ludwigia peploides* with the free-floating *Salvinia biloba*, along with their epiphytic biofilms. Ivermectin was detected in sediment, roots, leaves, and biofilm. The rooted *L. peploides* accumulated more ivermectin than the floating *S. biloba*, particularly in roots and biofilm.

These findings show that macrophyte life form influences ivermectin accumulation patterns and highlight the role of epiphytic biofilm as a retention compartment. The results help improve our understanding of the environmental fate of veterinary pharmaceuticals in livestock-impacted wetlands and, more broadly, the behavior of emerging contaminants in aquatic ecosystems.

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Lorente, C. J., Licursi, M., Gutierrez, M. F., Miró, M. V., Lifschitz, A., & Mesa, L. (2026). Contrasting accumulation of ivermectin in rooted emergent and free-floating

macrophyte-biofilm assemblages from floodplain wetlands. *Journal of Environmental Quality, 55,* e70229. https://doi.org/10.1002/jeq2.70229

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