ZOONOSES OF FISH, AMPHIBIANS, AND REPTILES

PATHOGEN	TRANSMISSION	ANIMAL DISEASE	HUMAN DISEASE
Salmonella spp.	• direct contact, handling, and ingestion of animal tissue and/or water • remains virulent in tap water for 3 months and pond water for 4 months	• fish, amphibian and reptile carriers rarely show any clinical disease • intermittent shedding	• abdominal pain, acute gastroenteritis, bloody mucoid diarrhea, nausea, vomiting, fever • meningitis, osteomyelitis, urinary tract infections • increase prevalence and severity in immunocompromised patients
Aeromonas spp.	• puncture wounds, lacerations, and ingestion	• ulcerative stomatitis in snakes • fatal hemorrhagic septicemia in snakes and fish • common isolate of fish skin ulcers	• wound infections, fever • diarrhea • septicemia in immunocompromised patients
Campylobacter spp.	• handling and ingestion of animal tissue and/or contaminated water	• fish, amphibian, and reptile carriers rarely show any clinical disease	• diarrhea, acute gastroenteritis, nausea, vomiting, cramps, fever
Klebsiella spp. *Enterobacter spp.*	• direct contact, handling	• fish and reptile carriers rarely show any clinical disease • pulmonary infections in snakes	• urinary tract infections, septicemia
Yersinia spp.	• handling fish and reptiles	• enteric “red-mouth” disease	• acute, painful gastroenteritis • mesenteric adenitis, nephritis, arthritis
Mycobacterium spp.	• handling, puncture wounds, scratches and/or inhalation	• affects fish and reptiles • granulomatous disease affecting skin, subcutis, oral mucosa, lungs, liver, spleen, gonads, bones, and/or CNS (“fish tank granuloma”) • hemorrhages, exophthalmos, and skeletal deformities in fish • ulcerative stomatitis in snakes	• circumscribed cutaneous granulomatous disease at infection site • immunocompromised patients may develop disseminated respiratory disease, lymphadenitis, arthritis, osteomyelitis and/or tenosynovitis

PATHOGEN	TRANSMISSION	ANIMAL DISEASE	HUMAN DISEASE
Zygomycosis Phycomycosis Mucormycosis	• inhalation, ingestion, or inoculation with spores	• saprophytic fungi are common isolates from fish, amphibian, and reptile gastrointestinal tracts • may produce upper respiratory disease and pneumonia	• upper respiratory infections and conjunctivitis may lead to meningitis • dermatitis or subcutaneous infection if wound contamination • gastritis or enteritis if ingested
Aspergillus spp.	• direct contact, inhalation	• isolated from skin, pulmonary, and systemic lesions of reptiles	• immunocompromised patients are highly susceptible to disseminated disease • bronchopneumonia, disseminated infections (thyroid, brain, myocardium), and/or hypersensitivity
Candida spp.	• direct contact, inhalation	• isolated from pulmonary and hepatic lesions of reptiles and skin lesions of fish	• immunocompromised patients are susceptible to hematogenous spread to eyes, kidneys, bones • white plaques on oral mucosa, skin-fold dermatitis
Cryptosporidium	• no know transmission to humans	• isolated from reptiles and fish	• immunocompromised patients are highly susceptible to severe, persistent diarrhea
Gnathostomiasis	• handling or ingestion of contaminated water	• infected fish shed infective nematode larvae into water • amphibians and reptiles may be transport hosts	• nausea, salivation, pruritus, edema, urticaria, and stomach discomfort • larvae may migrate to other organs leading to localized inflammation and/or specific organ disease
Mites	• direct contact with infested animal	• heavy infestations on reptiles may lead to severe anemia, lethargy, and death	• papular, vesicular, or bullous lesions with variable pruritus

References

Nemetz, TG and EB Shotts, Jr. 1993. Zoonotic Diseases. In: Fish Medicine. MK Stoskopf, ed. W.B. Saunders Company, Philadelphia. pp. 214-20.

Johnson-Delany, CA. 1996. Reptile Zoonoses and Threats to Public Health. In: Reptile Medicine and Surgery. DR Mader, ed. W.B. Saunders Company, Philadelphia. pp. 20-33.

Acha, PN and B Szyfres. 1989. Zoonoses and Communicable Diseases Common to Man and Animals. 2nd Ed. Pan American Health Organization, Washington, D.C.