Rare toxic algae identified

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Scientists have identified an unusual species of pathogenic algae that causes human skin infections, described in a new study in the *International Journal of Systematic and Evolutionary Microbiology*. The finding should improve our understanding of how rare species of algae are sometimes able to cause serious disease in humans and animals.

Researchers from Teikyo University in Tokyo isolated a previously unidentified species of microalgae from a biopsy of a human chronic skin ulcer. They named the micro-organism Prototheca cutis after comparison with other strains showed it was genetically similar to Prototheca wickerhamii - a rare algal species that has previously been associated with causing human skin infection, septicemia, or meningitis.

Microalgae are a very diverse group of single-celled organisms that are found living in most aquatic environments on Earth. Most algae possess chloroplasts enabling them to fix sunlight into biomass through photosynthesis and are completely harmless to humans. However, Prototheca species that reside in sewage water and soil, do not photosynthesise and may occasionally cause infection in immunocompromised humans and other animals by entering open wounds. Skin infections such as discharging ulcers are the most common in humans although occasionally serious systemic infections may occur.

Dr Koichi Makimura who led the team of researchers explained that because there have been so few reported cases of algal infections in humans, effective treatment protocols have not been well-established. "Antifungal drugs are most often used to treat algal infections but are not

always successful," he said. "We need to closely monitor Prototheca infections to understand their spread and mechanisms of causing disease, which are as yet unknown. This information will then help us develop appropriate treatments."

Research into pathogenic algae could also have benefits for industry. "Prototheca infection is known to cause bovine mastitis in cattle - an inflammatory disease of the udder that costs the dairy industry millions of pounds each year," explained Dr Kazuo Satoh who conducted the study. "New strategies to control this disease could have a huge economic impact," he said.

More information: Paper: doi:10.1099/ijs.0.016402-0

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