

Bacterial slime helps cause serious disease

Leptospirosis is a serious but neglected emerging disease that infects humans through contaminated water. Now research published in the May issue of the journal *Microbiology* shows for the first time how bacteria that cause the disease survive in the environment.

Leptospirosis is a major public health problem in South East Asia and South America, with over 500,000 severe cases every year. Between 5% and 20% of these cases are fatal. Rats and other mammals carry the disease-causing pathogen *Leptospira interrogans* in their kidneys. When they urinate, they contaminate surface water with the bacteria, which can survive in the environment for long periods.

“This led us to see if the bacteria build a protective casing around themselves for protection,” said Professor Mathieu Picardeau from the Institut Pasteur in Paris, France. Previously, scientists believed the bacteria were ‘planktonic’, living freely in the water. But Professor Picardeau and his team have shown that *L. interrogans* can make biofilms, which could be one of the main factors controlling survival and disease transmission.

Many different bacteria make biofilms, which protect them against harsh conditions and make them more resistant to antibiotics. They do this by producing a slime, in which the colony can grow unharmed. “90% of the species of *Leptospira* we tested could form biofilms. It takes *L. interrogans* an average of 20 days to make a biofilm,” said Professor Picardeau.

This ability may contribute to the long-term survival of the bacteria in environmental water and even help them cause disease in humans. Biofilm formation might also play an important role in keeping the bacteria alive in the kidneys of animals such as rats without causing disease.

“This finding is a step forward in our understanding of Leptospirosis. We now need to study the mechanism of biofilm formation in both fresh water and renal tubules in animal kidneys,” said Professor Picardeau.

“We hope our research will lead to the identification of new strategies to diagnose and prevent this neglected emerging disease.”

Source: Society for General Microbiology

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