

## **AMOÉBA: publication of a new paper in the scientific journal « Pathogens »**

### **Absence of intracellular multiplication of seven legionella strains in the amoeba *Willaertia magna* C2c Maky.**

**Chassieu (France), October 20, 2021 - AMOÉBA (FR0011051598 - ALMIB)**, producer of a biological biocide capable of eliminating bacterial risk in water and human wounds, and of a biocontrol product for plant protection, still in the testing phase, announces the publication in *Pathogens*, the international high-impact peer-reviewed scientific journal, of scientific results showing the absence of intracellular multiplication of seven strains of legionella in the amoeba *Willaertia magna* C2c Maky.

This work follows and supplements the paper jointly published in 2020 by the Institut Hospitalo-Universitaire Méditerranée Infection in Marseille and the company Amoéba in Chassieu (*see press release of February 7, 2020*). The results of this new study have just been published in the special issue "Classic and Non-classic Intracellular Bacteria: Host immunity and Microbial Persistence Strategies" of *Pathogens*, that covers topics related to pathogens and pathogen-host interactions. The published and peer-reviewed paper reports the **efficacy of the amoeba *Willaertia magna* C2c Maky in ingesting and eliminating seven strains of *Legionella non-pneumophila*** (<https://www.mdpi.com/2076-0817/10/10/1350/pdf>).

Some amoebae, widely distributed in the environment such as *Acanthamoeba castellanii*, are known to multiply *Legionella*. Amoeba showed in 2020 that this phenomenon did not occur in *Willaertia magna* C2c Maky with three strains of *Legionella pneumophila*. However, there are more than 60 species of *Legionella*, some of which can also cause outbreaks of Legionellosis. It was therefore essential to verify with representative strains that *Willaertia magna* C2c Maky was able to eliminate them.

#### **Confirmation of the ability of *Willaertia magna* C2c Maky to ingest and eliminate legionella**

Results demonstrate that ***Willaertia magna* C2c Maky is also resistant to other species of *Legionella***. This property was evaluated in parallel for two other amoebae, known to be permissive. On the one hand, the data corroborate the multiplicative capacity of certain *Legionella* in *Acanthamoeba castellanii* and in an amoeba of the same species as *Willaertia magna* C2c Maky, the amoeba *Willaertia magna* T5(S)44. On the other hand, these results confirm the ability of *Willaertia magna* C2c Maky to ingest and eliminate legionella.

The authors studied 7 *Legionella non-pneumophila* strains belonging to the species *L. longbeachae*, *L. anisa*, *L. bozemaniae*, *L. taurinensis*, and *L. dumoffii*, some of which were responsible for legionellosis epidemics. As temperature can influence amoebic behavior, a temperature range (between 22°C and 37°C) that can be encountered in cooling water from cooling towers was used.

- **At 22°C:** the three amoebae were able to phagocytose the seven bacterial strains and prevent their intracellular multiplication except for *L. longbeachae* which multiplied in *Willaertia magna* T5(S)44.
- **At 37°C:** four bacterial strains were able to hijack the cellular machinery of one or two amoebae, but in neither of *Willaertia magna* C2c Maky.

"These results confirm that *Willaertia magna* C2c Maky has unique properties and is an excellent candidate to become the first biological biocide for the treatment of water in cooling towers," says Sandrine DEMANECHÉ, Chief Scientific Officer at Amoéba.

**As a reminder, the evaluation of the regulatory dossier for approval of the biocidal active substance *Willaertia magna* C2c Maky for use in cooling towers in Europe is under review by the Member State rapporteur, with an end of evaluation scheduled for the end of 2021, before shifting to the European level for review by the European Chemicals Agency (ECHA).**

#### **About AMOÉBA:**

Amoéba's ambition is to become a major player in the treatment of bacterial risk in the fields of water, healthcare and plant protection. Our biological solution is an alternative to chemical products widely used today. Amoéba is currently focusing on the market of industrial cooling towers estimated at €1.7Bn (1) on a global chemical biocide market for water treatment, evaluated at €21Bn (2) and on the biocontrol market for plant protection estimated globally at €1.6Bn (4). In the future, the Company is looking at developing new applications such as chronic wound care, estimated at € 751 million (3) in the USA. Sales of associated products with healthcare, biocides and crop protection are subject to the Company being granted local regulatory market authorizations. The Company is currently in a trial phase for biocidal and plant protection applications and does not market any products.

Created in 2010, based in Chassieu (Lyon, France) with a subsidiary in Canada and in the United States, Amoéba is quoted on Euronext Growth. The Company is a member of the BPIfrance Excellence network and is eligible for the PEA-PME SME equity savings plan setup. More information on [www.amoeba-nature.com](http://www.amoeba-nature.com).

(1): Amoéba data combined from sources: DRIRE 2013, Eurostat, ARHIA 2013

(2): Sources combined by Amoéba from water treaters, Freedomia, Eurostat et MarketsandMarkets

(3): BCC Research, "Markets for Advanced Wound Management Technologies," Wellesley, MA, 2017

(4): Biopesticides Worldwide Market 2013, CPL, Wallingford, UK

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