

New strain of yeast to be helpful in toxic waste removal

August 5 2015



The researcher is working with *Yarrowia lipolytica* Y-3492 strain at Microbial Technologies Lab of Kazan Federal University Credit: Inna Basyrova

A new strain of yeast called *Yarrowia lipolytica* Y-3492 has been found to be very active in waste water treatment. The discovery was made by

by microbiologists from Kazan Federal University during their research at Western Siberian peat bogs.

The strain is said to be effective against nitro compounds which are used in explosives, herbicides, insecticides, polymers, dyes, and some medications. Oil refineries and military equipment plants produce especially high amounts of such waste. The research was conducted with the use of widely known trinitrotoluene (TNT).

It is well-known that TNT can cause serious health damage. Chronic TNT poisoning affects blood, liver, gastrointestinal tract, and vision. Prolonged exposure can lead to cataracts.

In four months, *Yarrowia lipolytica* can reduce contamination level by 50-fold.

This fungi *Yarrowia lipolytica*'s advantage in comparison with different sorbents is that fungi produce significantly fewer toxins. They are also more efficient than other known microorganisms.

Senior research associate of Microbial Technologies Lab Irina Khilyas explains, "*Yarrowia lipolytica* possesses specific ferments that allow us to use them in bioremediation of wastewater polluted with TNT. Together with Airat Ziganshin and Robin Gerlach (Montana State University), we designed a decontamination technique using semicontinuous cultivation of aforementioned fungi. The lab tests that followed proved the effectiveness of this development".

It must also be noted that this strain can not only be used for biodegradation but also as a contamination detector. The express analysis with biosensor equipment takes only a few minutes.

Irina Khilyas adds, "We are in the final stages of ferments identification

study, which is being conducted in cooperation with Günter Lochnit of Justus Liebig University Giessen. The next step is to find the most suitable carriers where we could apply those ferments. Most likely it will be a microchip on which the sample will be placed for further analysis".

Provided by Kazan Federal University

Citation: New strain of yeast to be helpful in toxic waste removal (2015, August 5) retrieved 7 May 2024 from <https://phys.org/news/2015-08-strain-yeast-toxic.html>

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