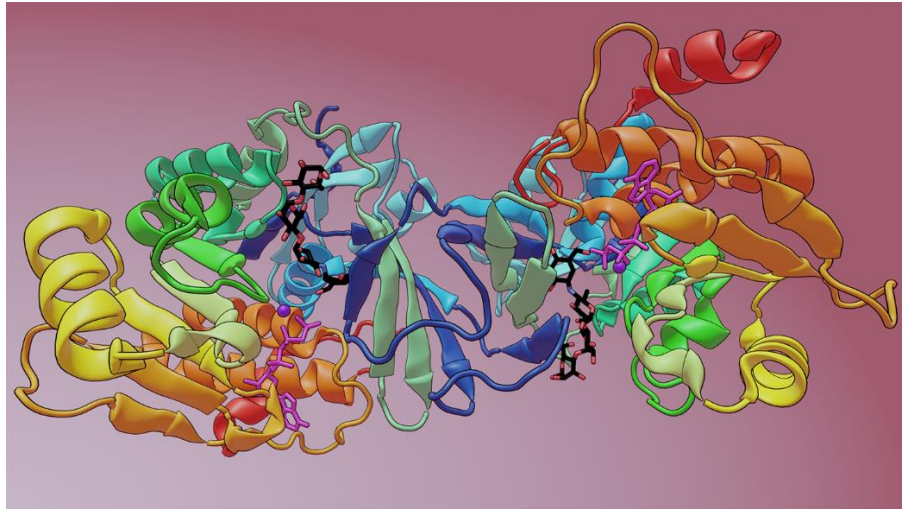


Oral & Gut Microbes Can Inactivate an Antidiabetic Drug



Using metagenomic techniques, the team identified a microbiome-encoded enzyme that modifies acarbose, causing its inactivation. This diagram depicts the drug acarbose (black, red, and blue stick structure) bound to the crystal structure of the enzyme.

J. Balaich, M. Estrella, G. Wu, P. D. Jeffrey, A. Biswas, L. Zhao, A. Korennykh, M. S. Donia. *Nature* 600, 110–115 (2021).

Work was in part performed at Brookhaven National Laboratory

National Synchrotron Light Source II

Scientific Achievement

Scientists discovered that some bacteria found in the human mouth and gut can inactivate acarbose, which is a commonly prescribed antidiabetic drug.

Significance and Impact

This study may point to an unanticipated interaction between the human microbiome and a clinically important drug against diabetes.

Research Details

- Found eight microbiome enzymes that inhibit acarbose.
- Used X-ray crystallography at the AMX & FMX beamline at NSLS-II to explore the enzymes' interaction with acarbose.
- Re-analyzed a clinical study on diabetes drug effectiveness & found that humans with these enzymes benefitted slightly less from the drug than humans that did not possess them.