

# Older drugs no match against drug-resistant infections

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As antibiotics lose their punch, a team of researchers at McMaster University discovered "old" drugs that doctors are turning to also have built-in problems in thwarting infectious diseases.

Gerard Wright, director of the Michael G. DeGroote Institute for Infectious Disease Research, examined rifampin ADP-ribosyltransferase (ARR), an enzyme that gives rise to resistance to rifampin, a 40-year-old drug used to treat tuberculosis and hospital-acquired infections, such as multi drug-resistant staphylococcus aureus (MRSA).

Wright and his team found that the gene coding the ARR enzyme is widespread in a variety of bacteria in the environment (outdoors, water, soil, streams, oceans) and hospitals and that it is equally effective blocking "old" antibiotics like rifampin as well as new versions of this drug recently introduced into the clinic.

This research shows that the effectiveness of re-using "old" drugs such as rifampin is hindered by resistant organisms that already exist in bacterial strains in hospitals and in soil in the broader community.

"Our work provides a blueprint on how to learn about these mechanisms and how we can use this knowledge to be more strategic on what new compounds to make and how to deploy them effectively," he said.

The research appears in the upcoming issue of the *Proceedings of the National Academy of Sciences (PNAS)*.

Drug-resistant diseases are a growing problem. For example, MRSA rates in Canadian hospitals are now 10 times higher than in 1995, according to the Canadian Nosocomial Infection Surveillance Program which follows infection rates and trends in Canada.

Source: McMaster University

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