

# Resistant gut bacteria will not go away by themselves

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*E. coli* bacteria that have developed resistance to antibiotics will probably still be around even if we stop using antibiotics, as these strains have the same good chance as other bacteria of continuing to colonise the gut, according to a thesis at the Sahlgrenska Academy.

*E. coli* bacteria are found naturally in large quantities in our intestines. These bacteria do not normally cause disease, but there are several strains that can result in diarrhoea. In serious cases, they can also cause peritonitis and septicaemia.

The faeces of 128 Swedish infants were analysed in the studies underlying the thesis. The results show that 21% of *E. coli* strains in these infants' gut flora were resistant to at least one type of antibiotic. Even children who had never been given antibiotics had resistant bacterial strains in their intestines.

"This is a growing problem, and it's serious even when ordinary harmless bacteria develop resistance, as these genes can be transferred to more harmful bacteria," says microbiologist Nahid Karami.

Many had thought that resistant bacteria would disappear if the use of antibiotics were to be reduced, but the thesis shows that *E. coli* strains carrying resistance genes are just as good at colonising the gut for long periods as sensitive strains.

"Our research suggests that there's little cost to the bacteria from carrying a resistance gene, and this presumably means that this resistance will be retained for a long time by the bacteria in our gut flora even if we stop using antibiotics," says Karami.

Bacteria have a natural ability to absorb and transfer resistance genes to other bacteria. The

study discovered two cases of such transfers between *E. coli* strains found simultaneously in a child's intestines. The first was in an infant who was treated with penicillin, and the second in an infant who was not treated with antibiotics.

"Our results suggest that the transfer of resistance genes in the gut flora may be very common, which makes the resistance issue much more serious, as genes can easily be transferred from bacteria in the normal flora to more harmful bacteria," says Karami.

Source: Swedish Research Council

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