Polar bear droppings advance superbug debate

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These are Polar bears. Credit: Jon Aars, from the Norwegian Polar Institute.

Scientists investigating the spread of antibiotic-resistant superbugs have gone the extra mile for their research - all the way to the Arctic. Researchers writing in the open access journal *BMC Microbiology* found little sign of the microbes in the droppings of polar bears that have had limited or no contact with humans, suggesting that the spread of antibiotic resistance genes seen in other animals may be the result of human influence.

Trine Glad, from the University of Tromsø, Norway, led a study that examined feces samples from five polar bears and rectal swabs from another five polar bears between 2004 and 2006. She said, "The presence of antibiotic resistance genes has previously been described in bacteria taken from the feces of deer, foxes, pigs, dogs and cats. The

Barents Sea population of polar bears is located in an area that is sparsely populated by humans. This enables us to study an ecosystem with little human impact and should allow us to determine whether these genes are naturally occurring or are caused by exposure to human antibiotics".

The researchers found that there was scant evidence of antibiotic resistance genes in the bacteria taken from these isolated bears. Overall, the bacterial diversity in the bears' feces was low. Speaking about these results, Glad said "Our analysis of polar bear feces showed a homogenous microbial flora dominated by Clostridia, most of them well characterized as they are also dominant in the human gut. These findings fit nicely with previous studies of the gut microbial ecology in mammals, indicating that bacterial diversity is lower in carnivores, such as polar bears that feed mostly on seals, than herbivores".

Bacterial diversity in faeces from polar bear (Ursus maritimus) in Arctic Svalbard, Trine Glad, Pal Bernhardsen, Kaare M Nielsen, Lorenzo Brusetti, Magnus Andersen, Jon Aars and Monica A Sundset, *BMC Microbiology* (in press), www.biomedcentral.com/bmcmicrobiol/

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