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# Quantification of the metabolic cost of infection

Can the metabolic cost of infection be quantified? The answer to that question is of course: YES. The economic benefit of growth promoters is based on reducing the energy a body needs to fight against invaders by knocking out these invaders. They do that before the invaders do harm to the body through antimicrobial action.In other words, when these invaders are tackled by, for example, vaccination or high health, the growth promoters are no longer necessary without jeopardising average daily gain (ADG).

The beneficial effect of growth promoters is frequently researched and reported, but the mode of action is not always explained. A nice field study was reported a few years ago where two different vaccines against the same disease were tested. The aim was to see if there would be a difference in economic performance between the two groups under study.

In this study large groups of pigs were included. The origin of the pigs, housing, feeding and the management system for both groups was the same. Different but related parameters were checked. This included viral detection, antibody profiles, feed consumption, ADG and bodyweight at different time points. It appeared that in one group there was a (low-)percentage of pigs that showed the presence of virus (by PCR), despite vaccination. A seroconversion leading to a higher level of antibodies was also found at the end of the fattening period, indicating a reaction to the field virus infection.

In the other group no virus was detected and the antibody profile showed a steady decline after the antibody peak induced by vaccination. The total bodyweight of both groups at the moment of slaughter was the same. However, the group in which viral antigen and the antibody seroconversion was detected needed more feed to reach this amount in kilograms bodyweight. The cost of this extra feed can be considered as part of the metabolic cost of infection.

The body needed the extra energy, provided by the extra feed to clear the infection and to mount the necessary immune response. Were the researchers simply lucky to find this result? No, it is also a matter of a well-designed protocol. It is important to check for relevant parameters, have enough pigs on study to find a significant difference and keep the whole programme as simple as possible in order to avoid mistakes. Including diagnostic tests is essential. To check what happens on the outside (feed intake, disease, mortality) is relatively easy. To check what happens inside of pigs is much more difficult and needs training leading to expertise. This study was repeated in other countries and the same result was found.

When ‘inside’ looking is mastered and the relation between the ‘outside and inside’ results can be made, a lot of money is suddenly at stake. This can all be saved due to avoiding the metabolic cost of infection.