

Dietary cinnamaldehyde enhances acquisition of specific antibodies following helminth infection in pigs - DTU Orbit (09/11/2017)

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Dietary phytonutrients such as cinnamaldehyde (CA) may contribute to immune function during pathogen infections, and CA has been reported to have positive effects on gut health when used as feed additive for livestock. Here, we investigated whether CA could enhance antibody production and specific immune responses during infection with an enteric pathogen. We examined the effect of dietary CA on plasma antibody levels in parasite-naïve pigs, and subsequently acquisition of humoral immune responses during infection with the parasitic nematode *Ascaris suum*. Parasite-naïve pigs fed diets supplemented with CA had higher levels of total IgA and IgG in plasma, and *A. suum*-infected pigs fed CA had higher levels of parasite-specific IgM and IgA in plasma 14 days post-infection. Moreover, dietary CA increased expression of genes encoding the B-cell marker *CD19*, sodium/glucose co-transporter1 (*SCA5L1*) and glucose transporter 2 (*SLC2A2*) in the jejunal mucosa of *A. suum*-infected pigs. Dietary CA induced only limited changes in the composition of the prokaryotic gut microbiota of *A. suum*-infected pigs, and *in vitro* experiments showed that CA did not directly induce proliferation or increase secretion of IgG and IgA from lymphocytes. Our results demonstrate that dietary CA can significantly enhance acquisition of specific immune responses in pigs. The underlying mechanism remains obscure, but apparently does not derive simply from direct contact between CA and host lymphocytes and appears to be independent of the gut microbiota.

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