The Campylobacter jejuni contamination level in houseflies after exposure to materials contaminated with Campylobacter

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Houseflies have been found to carry *Campylobacter jejuni* and play a role in infection of poultry flocks. This study aimed to elucidate the quantitative campylobacter level in naturally infected houseflies depending on their previous exposure to campylobacter-contaminated material in terms of campylobacter level, duration and type of material. Houseflies (*Musca domestica*) reared under laboratory conditions were placed in 250-ml cups containing 5 g of chicken faeces or 1 ml liquid and spiked with 3, 4, 5 or 7 Log cfu *C. jejuni*. Sixteen houseflies were added to each cup at a time. After approx. 1 h of exposure, 4 flies were removed from the cup for direct enumeration of campylobacter by plate spreading. Another 4 flies were transferred onto an Abeyta-Hunt-Bark (AHB) agar plate (9 cm) to assess if flies will contaminate surfaces. After 1 h on the plate, each fly was tested for campylobacter. This procedure was repeated after approx. 4 h of exposure for the remaining eight flies. The percentage of houseflies positive for campylobacter as well as the Log 10 cfu recovered per fly depended on the contamination level and the material exposed to. For faeces, 90.0% (n=80), 48.4% (n=64), 6.3% (n=48) and 0% (n=16) of flies were campylobacter positive when exposed to 7, 5, 4, and 3 Log 10 cfu with a mean (±SE) of 2.0±0.1, 0.8±0.1, 0.3±0.0 and 0 Log 10 cfu recovered per campylobacter-positive fly, respectively. For liquid, 95.7% (n=47), 91.4% (n=47), 20.8% (n=48) and 6.3% (n=16) of flies were campylobacter positive when exposed to 7, 5, 4, and 3 Log 10 cfu with a mean of 3.3±0.2, 2.0±0.1, 0.8±0.2 and 0.3±0.0 Log 10 cfu recovered per campylobacter-positive fly, respectively. *Campylobacter* seemed to be taken up readily as there was no significant effect of exposure time (1 vs 4 h) and the uptake was higher from contaminated liquid than faeces. The surface of the AHB plates was only contaminated by houseflies previously exposed to either 5 or 7 Log 10 cfu and most by flies exposed to liquid (45% n=48) opposed to faeces (31% n=72). The results support that houseflies are likely to become contaminated with campylobacter if exposed to material containing >4 Log 10 cfu.