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Campylobacter contamination level in houseflies after exposure to materials containing *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 Log₁₀ 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 Log₁₀ cfu with a mean (±SE) of 2.0±0.1, 0.8±0.1, 0.3±0.0 and 0 Log₁₀ 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 Log₁₀ cfu with a mean of 3.3±0.2, 2.0±0.1, 0.8±0.2 and 0.3±0.0 Log₁₀ 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 Log₁₀ 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 Log₁₀ cfu.