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Detection and quantification of DNA from *Toxoplasma gondii* in pork, beef and lamb meat at retail in Canada using magnetic capture DNA extraction and qPCR

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Toxoplasma gondii is a parasite that raises public health concerns worldwide. Ingestion of undercooked meat is one of the multiple transmission routes involved in human toxoplasmosis. The data required to asses this risk are either non-existent or outdated among different meat commodities. This project aims to estimate the prevalence and to quantify the risk related to the presence of *T. gondii* in pork, beef and lamb retail meat in Canada. As a first step, approximately 200-300 samples of each commodity have been purchased in food stores across five provinces. We have selected a molecular detection method of DNA extraction by magnetic capture followed by a qPCR to estimate the number of parasites (adapted from Opsteegh et al., 2010). This method is suitable for large scale studies (unexpansive, simple, fast and ethic) and has a sensibility that is reported to be similar to the bio-assay, which is the gold standard for that purpose. The magnetic beads are coated with streptavidin and bind to a biotin tagged capture oligonucleotides. The sequence targeted is a non-coding 529 bp DNA fragment that is repeated 200-300 times in the *T. gondii* genome. We slightly adapted the protocol with only a few differences in the equipment and component's origin. We were so far able to identify 6 positive samples using this assay. However, for this qPCR, the DNA extraction quantitative controls, made of negative meat spiked with a known number of tachyzoites, is not in line with the standard curve made of pure total *T. gondii* DNA, indicating relatively poor DNA extraction. Positive samples are as well nearby the lowest DNA standard curve concentrations, suggesting a low number of parasites within the samples.