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**VARIABILITY OF EQUINE FAECAL EGG COUNTS BETWEEN SUBSAMPLES:
CAUSED BY BIOLOGICAL REASONS?**

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In equine parasitology faecal egg counts (FEC) using the McMaster method are becoming increasingly important. But FEC results present considerable variability questioning their reliability. Different reasons for this variability are discussed. Analogous to cell counts in haematology, FEC are based on a Poisson process and thus subject to random errors. The presented study demonstrates the influence of Poisson distribution on the variability of strongyle FEC between subsamples.

A total of 2214 faecal samples from 202 horses were mixed manually in a closed plastic bag. Two subsamples were analysed by a modified McMaster method with a sensitivity of 30 eggs per gram faeces (epg). The index of dispersion (ID) of all pairs of replicates was calculated for the results on the counted egg level (ID = variance/mean). In order to fit the Poisson distribution the ID of the two replicates should not exceed 5.

The maximal ID of all samples was 4.6 (1st FEC: 1590 epg; 2nd FEC: 780 epg). The ID of 2209 samples (99.8%) was 2 or lower.

The large variability between results of replicates is explained by the Poisson process. Therefore, further optimization of the mixing procedures was not possible. Consequently, 95% confidence intervals of treatment cut offs can be calculated with the Poisson distribution and the sensitivity of the method used. Through an understanding of the sensitivity of the FEC method and the associated 95% confidence intervals, reliable treatment decisions can be based on FEC despite the inevitable Poisson variability of this method.

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