Tryptophan metabolism in bats

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Background: Bats are known to exhibit a strong immune system. Since Tryptophan metabolism (Fig.1) is involved in the regulation of the immune system, we were interested to study the amount of L-Tryptophan (L-TRP), L-Kynurenine (L-KYN) and Kynurenic Acid (KYNA) in bat dropping samples.

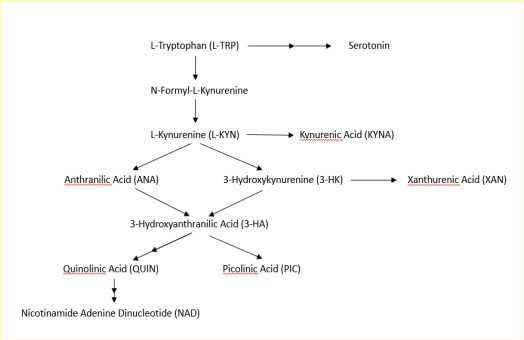

Fig.1: Overview of the Tryptophan metabolism.

Fig.2: Flying bat.

Methods: The concentrations of L-TRP, L-KYN and KYNA were measured in 20 bat dropping samples collected in Poland via HPLC with fluorometric (L-TRP, KYNA) and UV (L-KYN) detection.

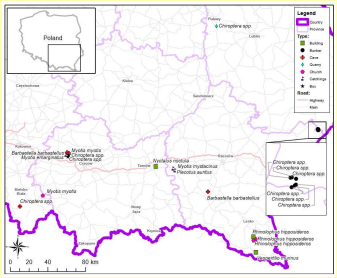

Fig.3: Locations in Poland, were samples of bats were collected.

Conclusion: Differences in the concentrations of L-TRP, L-KYN and KYNA may be due to species differences, different amount of food ingested, distinct stages of the immune system or different age. Higher L-TRP metabolite concentrations in bat dropping samples could also be due to differences in the composition of the gut microbiome and therefor differences in the rate of L-TRP metabolite synthesis.

Results: L-TRP (Fig. 4) and KYNA (Fig. 6) concentrations in bat dropping samples were in nanomolar to low micromolar range and L-KYN (Fig. 5) concentrations were in nanomolar range. We also investigated the L-TRP/L-KYN ratio which ranged from 0,01 to 92,8 (Tab.1).

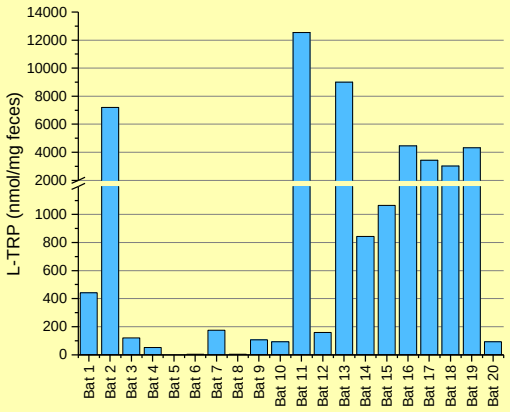

Fig. 4: L-TRP concentrations in bat dropping samples.

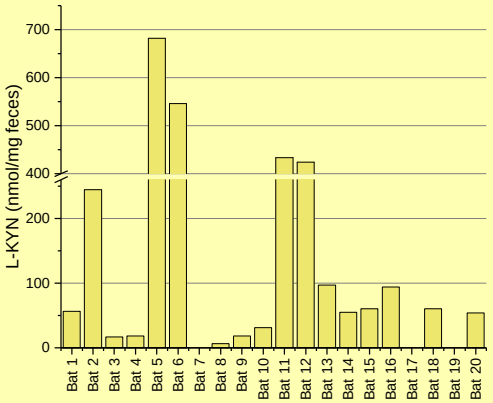

Fig. 5: L-KYN concentrations in bat dropping samples.

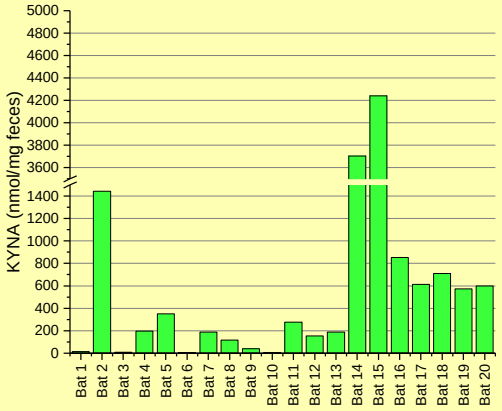

Fig. 6: KYNA concentrations in bat dropping samples.

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