

An aerial photograph of Berlin, Germany, featuring the Fernsehturm (TV Tower) and a dense forest in the foreground. The image is overlaid with a semi-transparent green filter.

CPEG

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Abstract Book



Short-term impact of diet on dental mesowear: New insights from dental topography and a controlled feeding experiment on domestic pigs

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Disentangling the complex interplay between environmental change and the diet of vertebrates requires dietary estimates working at multiple temporal scales. Mesowear i.e., the macroscopic effect of diet on dental wear, is a prominent estimate of pluri-annual dietary variation in extant and extinct mammals. Still, how subtle changes in diet might affect dental mesowear in the short term has yet to be thoroughly investigated. We looked at mesowear on the recently erupted upper and lower first molars, and the moderately worn fourth decidual premolars of 6-to-10 months-old domestic pigs (*Sus domesticus*). Trials were conducted on four groups of five individuals: the control group only fed on mixed cereal and soy flours, while the three other groups were supplemented with 30% barley grain, 20% corn kernels plus 20% corn flour, and 30 hazelnuts per day for 1 month before the end of the trial. We precisely describe mesowear using dental topography to measure tooth complexity, slope and curvature, as well as the curvature of low-slope areas i.e., the most worn areas. Comparison of the means between dietary groups was done using Dunn's post-hoc analysis of a one-way ANOVA on ranks. The effect of diet on mesowear was also assessed using linear models with wear as the explanatory variable. As expected, the complexity, slope and curvature of the tooth decreased as it wore out. However, both complexity and curvature were significantly lower in the premolars of hazelnut-fed pigs ($p < 0.05$). In addition, the curvature of worn areas increased in all groups but the barley-fed pigs, in which it remained stable ($p < 0.001$). These findings are promising not only for inferring the seasonal diet of extinct vertebrates, but also to study dietary variation in mammals from present-day ecosystems, some of which are difficult to observe.