ABSTRACT

TITLE:	Whet Your Apatite: A Dietary Reconstruction Using Stable Carbon Isotopes From Human Tooth Enamel at Tell Dothan
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ABSTRACT:

Stable isotope analysis represents an effective means of reconstructing diet in ancient populations. In this study, stable carbon isotope values were used to assess diet among individuals from Tell Dothan's Western Cemetery, located in the modern-day West Bank. Carbonate was isolated from human maxillary left first molars (n=34) and faunal (n=6) teeth, and analyzed using an isometric ratio mass spectrometer (IRMS). We hypothesized that there would be significantly different 13C enrichment between teeth from the Late Bronze (1400-1300 BC; Level 1; n=17) and Early Iron (1200-1100 BC; Level 4; n=17) Ages, possibly reflecting significant cultural changes - including increased trade, migration, and political unrest - that occurred in the region during this time. We also hypothesized that samples would exhibit depleted d13Cap values due to a diet high in C3 grains, widely thought to be the standard diet of the period.

Results showed homogeneity and continuity between the Late Bronze and Early Iron Ages at Tell Dothan, with no statistically significant difference in d13Cap values (Mann-Whitney U, p=0.9) or variance (Levene's test, p=0.6) between Level 1 (-11.9 ± 0.4 ‰) and Level 4 (-11.9 ± 0.6 ‰). These data suggest that the inhabitants of Tell Dothan consumed mostly C3 grains, with few C4 or marine resources, and maintained a similar diet over time despite considerable cultural changes. Faunal samples had a less negative mean d13Cap ratio (-9.2 ± 1.9 ‰), indicating that domesticated animals at the site consumed more C4 resources than their human counterparts.

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