REPORT ON RADIOCARBON DETERMINATION FOR SAMPLES RTK 6316, 6317, 6320, 6321

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From Meitzad Guzal excavation in the Dead Sea region (Israel), six samples were selected for dating with Radiocarbon method.
Of the six samples, 4 were plant remains (RTK 6316, 6317, 6320, 6321), 1 bone (RTK 6319) and 1 wood charcoal (RTK 6318). The selection of the samples was based on the archaeological context, type of material and quality.
Finally the charcoal sample was excluded due to the “old wood effect” and the bone had a very low collagen content and did not provide, after preparation, enough material for dating.

The 4 samples selected , RTK 6316, 6317, 6320, 6321, were all prepared according to the procedure in (*1*), and ^{14}C concentration was measured by Accelerator Mass Spectrometry.

The results of the analysis are given in table 1, together with the type of material, uncalibrated radiocarbon age (^{14}C age ± 1σ year BP) , calibrated ages for ±1σ (±1standard deviation meaning that there is a 68.2% probability that the right age is included in the interval) , calibrated ages for ±2σ (±1standard deviation meaning that there is a 95.4% probability that the right age is included in the interval), collection site, stable carbon isotope ratio ($\delta^{13}C$), preparation efficiency (prep ‰) and carbon percent (C%).
The preparation percent measured for th edifferetn samples indicates that the samples were in different state of preservation, while the carbon percent provided values as expected for cellulose materials. The stable isotopes ratio indicate that all the plants were C3 except for RTK 6316 which has a value typical of C4, not unusual since the site is in an arid region.

The radiocarbon ages measured and the calibrated ranges obtained show a recent orign for the samples RTK 6316, 6317, 6320. Due to the characteristic of the calibration curve in the last 300 years, more than one interval range is possible. The relative probabilities are given in parenthesis between the calibrated range limits.
Only sample RTK 6321has provided an age in the Late Iron age II with the higher probability between the 9th and first half of the 8th century BC for the ±2σ range. The proability distribution of the calibrated ranges for all the samples are given in the figure 1.

RTK #	TYPE	^{14}C age ± 1σ year BP	Calibrated age ± 1σ	Calibrated age ± 2σ	Collection Site	$\delta^{13}C$ ‰ PDB	prep %	C%
6316	plant	55 ± 50	68.2% probability 1700AD (19.7%) 1725AD 1815D (17.7%) 1850AD 1880AD (30.8%) 1920AD	95.4% probability 1681AD (25.9%) 1739AD 1752AD (1.3%) 1763AD 1802AD (68.2%) 1938AD	Meitzad Guzal. L112 B1026	-24.4	11.4	45
6317	plant	100 ± 50	68.2% probability 1690AD (17.4%) 1730AD 1810AD (50.8%) 1925AD	95.4% probability 1675AD (34.1%) 1780AD 1800AD (61.3%) 1940AD	Meitzad Guzal. L112 B1026	-9.1	23.1	40.3
6318	Charcoal	not to be done			Meitzad Guzal. L112 B1026			
6319	bone	too small			Meitzad Guzal. L110 B1022		0.55	
6320	plant	30 ± 55	68.2% probability 1700AD (19.3%) 1725AD 1815AD (16.4%) 1850AD 1880AD (32.5%) 1920AD	95.4% probability 1680AD (26.1%) 1760AD 1800AD (69.2%) 1940AD	Meitzad Guzal. L109 B1019	-21.7	20.0	57
6321	plant	2615 ± 55	68.2% probability 840BC (63.5%) 760BC 685BC (4.7%) 670BC	95.4% probability 900BC (76.0%) 740BC 690BC (6.7%) 665BC 650BC (12.8%) 550BC	Meitzad Guzal. L105 B1025	-24.4	64.8	33

Table 1: Samples information and results for the samples from Metzada Guzal. ^{14}C age are reported in conventional radiocarbon years (before present =1950) in accordance with international convention (*2*) . Thus all calculated ^{14}C ages have been corrected for the fractionation so as to refer the results to be equivalent with the standard $\delta^{13}C$ value of -25‰(wood). Calibrated ages in calendar years have been obtained from the calibration tables in (*3*, *4*) by means of OxCal v. 4.1.5 of Bronk Ramsey (2010) (*5*, *6*).

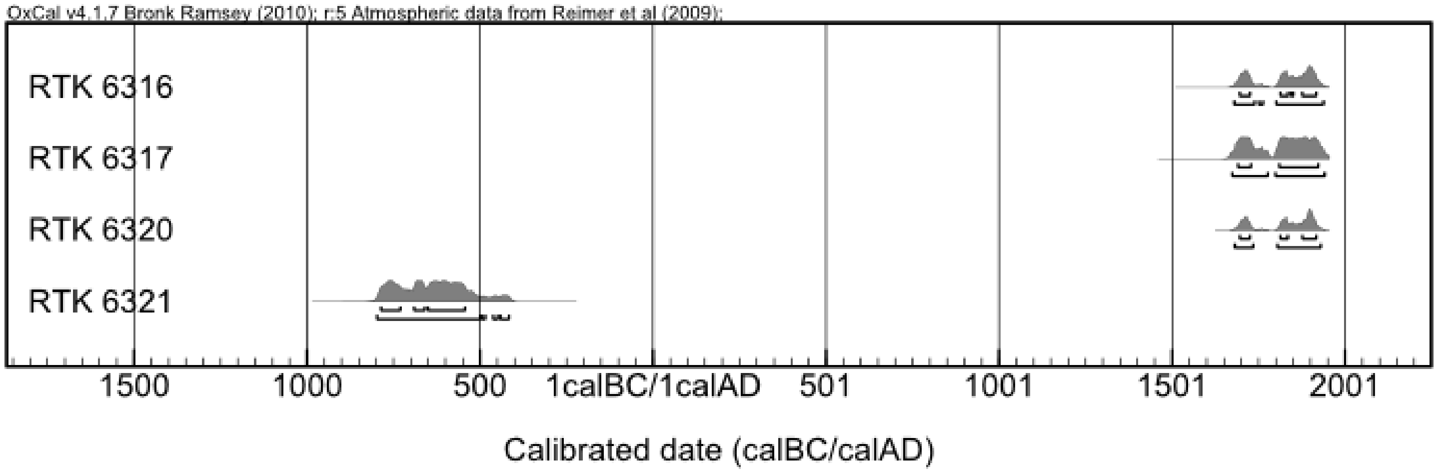

Figure 1: Probability distribution of the calibrated ranges for the samples from Metzada Guzal.

References

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