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Certificate of Analysis

September 9, 2020

Daniel Pérez De Las Vacas Cuevas
Laboratorios Phergal
c/ Hierro, 79
Torrejón De Ardoz
Madrid, 28850
SPAIN

Dear Daniel,

Listed below are the results for the ASTM method D6866-20 Radiocarbon (^{14}C) determination with the stable carbon isotope ratio ($\delta^{13}C$) analyses and their correction for the following sample received by our laboratory on [8/6/20] and completed on [9/4/20].

Sample ID/USDA#	^{14}C (Meas.)		$\delta^{13}C$	^{14}C (Corr.)	% Biobase	
	(pMC)	SD	(o/oo VPDB)	(pMC)	Carbon	SD
Naturtint Permanent Hair Color, USDA 8336	78.60	0.29	-28.00	79.07	79	1

Percent Biobased Carbon is determined from the measured ^{14}C in percent Modern Carbon (pMC) and corrected for isotopic fractionation based on measured $\delta^{13}C$ value (o/oo V-PDB). The corrected ^{14}C activity in pMC is then divided by the 2018 reference ^{14}C activity of 100.0 pMC, which represents the equivalence to the 1950 ^{14}C reference activity of 13.56 dpm/gC corrected for bomb-produced ^{14}C, and finally multiplied times 100. The % Biobase Carbon and Standard Deviation (SD) are rounded to the nearest integer. Measured ^{14}C is normalized using NIST Standard Reference Material 4990C Oxalic acid.

If we can be of any further assistance, or if you would like to discuss these results please do not hesitate to call.

Authorized by,

Michael C Marshall, PhD
Quality Manager
C.A.I.S. Inv. No: [**PP121**]

The University of Georgia Center for Applied Isotope Studies is accredited to ISO/IEC 17025:2017 standard by PJLA, Inc.

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