

## LECTURE ONLI

### Lecture Education Creates Terrifically Unique Researchers & Educators Of Newly Learned Isotopes

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#### COCONUT: Concerned Over Counterfeit Origins Now Uncovering Truth

##### **Background:**

Coconut water has become a popular drink globally.

##### **Hypotheses:**

1. The bottled coconut water isotopes will plot on the GMWL.
2. The bottled coconut water isotopes match modeled precipitation values from the location of production.
3. The “real” coconut water sample will match modeled precipitation values from the east side of Oahu.
4. Carbon isotope values from the sugar in the coconut waters will reflect a C3 sugar source.

##### **Results:**

1. There is some type of fractionation between meteoric water and coconut water.
2. It is likely that all three of the source waters of the coconut water bought in Honolulu, Germany, and North Carolina were bottled in the Philippines.
3. Carbon isotope values of the sugar inside the coconut are consistent with C3 sugars.

#### COCA COLA: Coke Originating (from) C3 (or C4 sugar) Also Containing Oxygen (and Deuterium from) Local Areas

##### **Background:**

Coca Cola is made from a combination of syrup, water and sugar.

##### **Hypothesis:**

1. The  $\delta^2\text{H}$ ,  $\delta^{13}\text{C}$ , and/or  $\delta^{18}\text{O}$  in Coca Cola are the same regardless of location purchased.
2. The  $\delta^2\text{H}$  and  $\delta^{18}\text{O}$  in Coca Cola reflect the isotope signature of tap water in the region of purchase.
3. The  $\delta^{13}\text{C}$  of Coca Cola reflects geographic origin and is more depleted at higher compared to lower latitudes

##### **Results:**

1. Water from Coca Cola falls nicely along the GMWL but varies somewhat from tap water values (possibly due to inconsistent source data)
2. Europe appears to be using a C3 sugar source (beet sugar) while the rest of the world uses C4 sugar sources (corn syrup, cane sugar)