

Minerals in water are a source of long life expectancy in Guanacaste

At the foot of a large Ceiba tree, Guillermo Alvarado took the water to fill several pumpkins. Already in the field-hunched over the plantation, Uncle Memo - as you know him in Hojanca - replenished his energies by sipping big amounts of that water mixed with sweet sugar cane.

At the end, that tradition that he cultivated for years of arduous fieldwork could be one of the reasons to explain that he has reached 90 years, so strong as the ceiba tree that gave shade to the water. He fulfilled that age on October 27th.

Uncle Memo lives in Hojanca for over 70 years. This is one of the five cantons of the [peninsula of Nicoya](#) that make up one of the [five blue zones of the planet](#), named for the high longevity of its inhabitants (people live 100 years or more).

A study of the National Water Laboratory of the Institute of the Costa Rican Aqueducts and Sewers (AyA), found a high presence of minerals in the water they drink in that area.

This data provides a valuable clue about the causes for which people live so many years and in such good health, as Guillermo Alvarado.

The water they drink in Hojanca, Santa Cruz, Nandayure, Carrillo and Nicoya rank as moderately hard and hard because of its high concentrations of calcium and magnesium.

Both minerals, consumed in optimal doses (from 90 to less than 270 milligrams per 34 fl oz of water), are factors of human health protection, explained Darner Mora Alvarado, who participated together with Carlos Portu-guez, Nubia Alfaro and Michell Hernández in this research.

Calcium, for example, protects bones and helps transmission of neuromuscular stimuli. Meanwhile, the Magnesium strengthens cardiac functioning, but that is only one of its more than 300 functions.

But when both are consumed in excess, in concentrations that exceed 270 milligrams per 34 fl oz of water, they could produce kidney stones.

The team led by Mora studied 425 water sources and conducted more than 3,000 physicochemical analyzes between 2007 and 2013.

They found that longevity rates per 10,000 inhabitants are higher at sites with higher hardness levels of water.

The longevity rate is 179 per 10,000 inhabitants, in people between 80 and 89 who live in the blue zone and drink hard water. When comparing to the population living outside this territory the rate is 33 points lower.

Other factors: In addition to the Nicoya Peninsula, they have identified four other blue zones: Loma Linda, in California (USA), Sardinia (Italy), Icaria (Greece) and Okinawa (Japan).

People live longer there for a combination of factors which include genetics, nutrition, physical activity, relationships, family and a strong spirituality.

Therefore, Darner Mora, of AyA, clarified: "The hardness of water is one more factor; not the only one" For the demographer Luis Rosero Bixby, who has studied longevity in Nicoya's blue zone, said the analysis of the National Laboratory of Waters "is an important and suggestive link between the presence of calcium and magnesium in the water and the high longevity in Nicoya" Rosero warned that they need more studies to establish the link between cause and effect.

This is among the plans of the Laboratory, confirmed Mora for what it would be essential to explore the averages of water hardness by district in other provinces of the country and verify people's longevity.

