

THE SECRETS OF THE COKE AND MENTOS FOUNTAIN

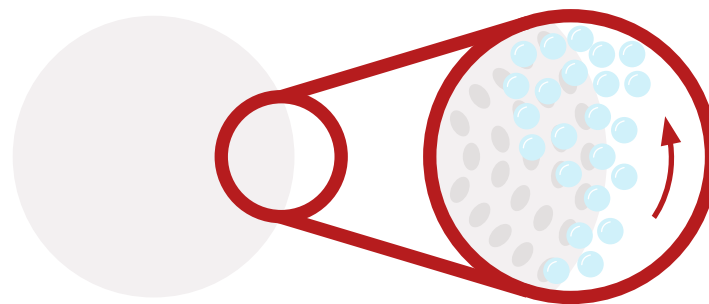


THE COKE AND MENTOS FOUNTAIN

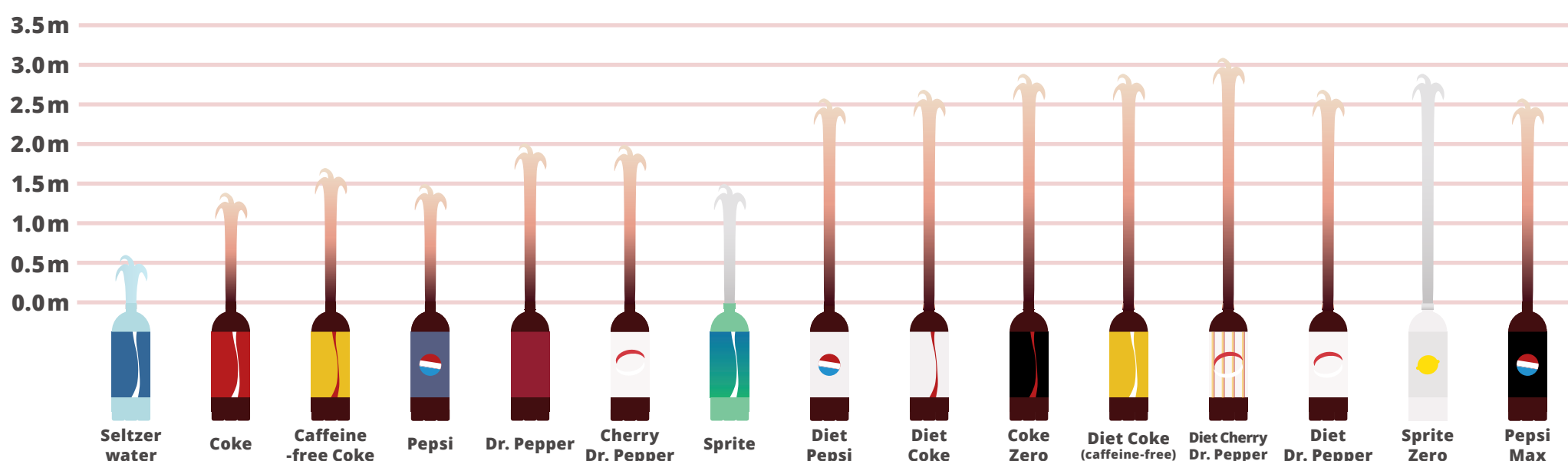
When Mentos are added to a bottle of Coke their surface acts as a nucleation site, allowing carbon dioxide bubbles to form rapidly and causing the fountain effect. It has been suggested that additives such as artificial sweeteners increase the fountain's height by lowering the surface tension. New research has suggested other compounds present may also affect fountain height.



2-LITRE BOTTLE = 15 GRAMS DISSOLVED CO₂
TURNS INTO 8 LITRES OF CO₂ GAS



HOW DOES THE TYPE OF CARBONATED BEVERAGE AFFECT THE FOUNTAIN HEIGHT?



In each case 11 Mentos candies were introduced to two-litre bottles of commercial carbonated beverages. Generally diet sodas showed the highest fountains, followed by sugar-sweetened sodas (likely due to increased viscosity), then seltzer water.

THE EFFECT OF SOLUTES

ASPARTAME

UP TO 3× HEIGHT

BENZOATE

UP TO 3× HEIGHT

CITRAL

UP TO 4× HEIGHT

LINALOOL

UP TO 4× HEIGHT

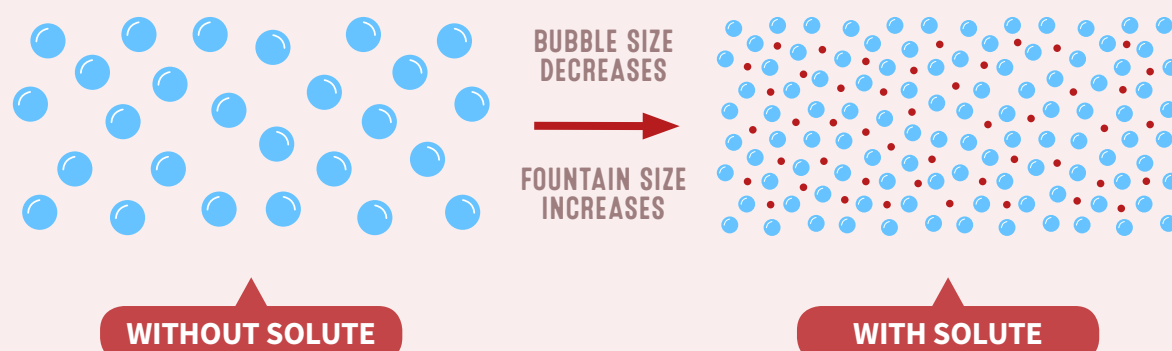
CITRIC ACID

UP TO 6× HEIGHT

Experiments with different dissolved solutes in seltzer water showed that different compounds affect fountain height by varying amounts, and at quantities typically found in soft drinks (with the exception of citric acid, where more was required to observe an effect).

THE SCIENTIFIC EXPLANATION

Dissolved solutes in carbonated drinks stop bubbles combining into bigger bubbles. With smaller bubbles there is a higher surface area for carbon dioxide to enter the bubbles, increasing the rate of degassing.



New demonstrations and new insights on the mechanism of the Candy-Cola soda geyser – T S Kuntzleman, L S Davenport, V I Cothran, J T Kuntzleman, D J Campbell; *J Chem Educ*; DOI: 10.1021/acs.jchemed.6b00862



CHEMUNICATE

© Andy Brunning 2017 – www.compoundchem.com/chemunicate

Based on materials provided by Thomas Kuntzleman, Department of Chemistry, Spring Arbor University