

Chemistry titration- example



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An investigation into the total acid content of assorted brands of lemon and lime soft drink

Abstract: The aim of this experiment was to determine the total levels of carbonic acid concentration in 3 differing brands of lemon and Lime soft drinks. **Research Question:** Does the acid content in three different lemon and lime flavored soft drink brand differ significantly? The purpose of this investigation is to calculate the total acid content within different brands of lemon and lime soft drink, to make judgments on the acidity differences in each brand.

Hypothesis: The soft drink that contains the highest percentage of carbonic acid, such as Mountain Dew, will have the highest concentration. **Explanation of hypothesis:** It can be presumed that Mountain dew contains the highest concentration of carbonic acid as it contains more ingredients and flavorings to contribute to its taste.

One of these ingredients is concentrated oranges Juice which in turn contains more acid. **Introduction:** The acid quantity in many foods and drinks are a significant factor In terms of the products taste.

Soft drinks are a common carbonated beverage that contains varying bevels of different mixtures of acids, such like; citric acid, carbonic acid, phosphoric acid, malice acid and many more (REFERENCE). The succession of carbonated products Is largely due to the Dalton of high levels of sweeteners wealth the products that may vary from high fructose corn syrup, fruit Juice and sugars. Companies In the production of making favorable soft drinks alma for the better tasting product, to which society would most prefer and Incidentally buy In preference to tooth; ere soft drinks.

This is therefore achieved by manufacturers deliberately increasing the sugar and acid content within carbonated beverages to maintain an ingredient used in almost all soft drinks. Essentially, carbonic acid is the result of the chemical reaction between water and carbon dioxide. $\text{CO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{CO}_3$ WHICH Carbonic acid is a typically weak acid. Acids can be defined in terms of possessing strong or weak properties. The strength of an acid refers to its tendency to lose a proton (H^+ ion).

A strong acid is typically an acid with a pK_a that is less than zero; a pK_a provides a measure of how acidic (or not) a hydrogen atom in a given molecule is (Conversely, a weak acid is an acid with a pK_a that is greater than zero; weak acids do not completely dissociate within water, whereas strong acids do).

Carbonic acid is a specific ingredient used in soft drinks that when dissolving pressurized carbon dioxide in water it becomes effervescent and creates the fizz in the drink (Livingston, 2008).

A carbonic acid is an acid which contains Source: The molecular structure of carbonic acid [http://en. Wisped. Org/wick/carbonic_acid](http://en.wikipedia.org/wiki/carbonic_acid) The purpose of this investigation was to calculate the total acid content within different brands of lemon and lime soft drink, to make judgments on the acidity preferences in each brand. When finding the total acid content in an acidic unknown solution, a titration procedure is used to do so precisely. This is achieved by neutralizing an unknown acid solution with a known base solution.

The chemical equation for finding total acid content in an unknown acid solution, by way of a titration is as follows: $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$ WHICH Niacin + AH Acids <https://assignbuster.com/chemistry-titration-example/>

in sprite: Acids in mountain: Acids in home brand lemonade (Woolworth select): When a mixture of chemicals neutralizes it creates water and salt (as shown from above chemical equation). Therefore, when titrating an unknown acid, when it reaches its neutral point (pH of 7) the volume of a base taken to neutralize the acid is then calculated to find the total acid content by the equations: concentration in 3 differing brands of lemon and lime soft drinks. Intent within different brands of lemon and lime soft drink, to make Judgments on The acid quantity in many foods and drinks are a significant factor in terms of the products is largely due to the addition of high levels of sweeteners within the Companies in the production of making favorable soft drinks aim for the better assisting product, to which society would most prefer and incidentally buy in preference to tooth-ere soft drinks. This is therefore achieved by manufactures enhance the taste, texture and flavoring of soft drink.

Carbonic acid is a very Noah+ WHICH Niacin + AH This experiment was conducted to determine the total levels of carbonic acid concentration in 3 differing brands of lemon and lime soft drinks. It was initially hypothesized that the soft drink to contain the highest percentage of carbonic acid, highest concentration of carbonic acid as it contains more ingredients and labouringly to contribute to its taste.

One of the ingredients is concentrated oranges juice which in turn contributes to the soft drink having higher acid percentages.

From the collected results it can be concluded that the presumed hypothesis was in-fact an accurate presumption and Mountain Dew does contain the

highest concentration of acid in contrast to the remaining 2 soft drinks titrated; sprite and Woolworth select lemonade. Table 2 presents the collected raw data from the mountain dew titration, showing variables from differing pH ranges against the approximate volume taken to neutralize acid. It can be seen that as the amount of NaOH was added to the unknown acid solution, the pH significantly changed.

This suggests that the mountain dew solution has a high acid concentration which in turn is readily neutralizing with the base (NaOH). Titration is as follows: Does the acid content in three different lemon and lime flavored soft drink brands differ significantly? The purpose of this investigation is to calculate the total acid content within different brands of lemon and lime soft drink, to make judgments on the acidity differences in each brand.