Is it too sweet?
The Degree sweetness in Lemon Tea
The Degree Of Sweetness Of Different Lemon Tea
1. Introduction
2. The ingredient of lemon tea
3. Information of different type of lemon tea
4. Nurture of lemon tea
5. Cause of diabetes
6. Experiments by mouth testing
7. Experiments by Benedict's solution
8. Discussion
9. Difficulties
10. Result and acknowledgements
11. Feelings
12. Express thanks
Introduction

Lemon Tea is a very popular drink. Student love it very much include us. But we find that different lemon tea have different sweetness. Some of them are extremely sweet, and some of them are sour.

Do you want to know that the degree of sweetness of different lemon tea? Let find it out with us!

Good initiative in testing the theory.
Work Assignment

- Kelly: Produce Process of Lemon Tea
- Phoebe: Ingredient of Lemon Tea
- Winkie: Different brands of Lemon Tea
- Susanna: History of Lemon Tea
- Natalie: Photo and Label of Lemon Tea
- Tami: Nurture of Lemon Tea
- Helen: Causes of Diabetes

Different Brands of Lemon Tea

- Vita/less sweet (維他/少甜)
- Nestle/Ice (雀巢/冰極)
- Lipton
- Hi-C (陽光)

Title for the photograph.

Give the labels of each sample.
Lemon tea ingredients

成份：
水,糖,紅茶,檸檬汁,調味劑,酸味劑(檸檬酸),維他命 C,酸度調節劑(檸檬酸鈉),抗氧化劑(304)

Product of Hong Kong.

Net Wt. 8.45 oz. (250ml)

Ingredients: Water, sugar, tea, natural flavors, citric acid, lemon juice concentrate, sodium citrate.

Nutrition Facts

Serving Size: 1 carton (250ml)
Servings Per Container 1
Amount Per Serving
Calories

140

Calories from Fat:

% Daily Value
Total Fat 0g 0%
Saturated Fat 0%
Cholesterol 0g 0%
Sodium 15mg 1%
Total Carbohydrate 34g 11%
Dietary Fiber 0g
Sugars 34g
Protein 0g

Vitamin A: 0% Vitamin C: 0%
Calcium: 0% Iron: 0%
The information of different types of Lemon tea

VITA LIGHT

Nowadays Hong Kong people are getting more and more health conscious. Such attitude can be reflected from our daily dining habit - on one hand we are concerned about calories intake but are still looking for taste enjoyment on the other hand. VITA LIGHT drinks, with low calories and low sugar, can satisfy Hong Kong people's need!

It contains less than 3 calories* and low sugar level at the same time! Having a stylish design, which truly reflects its “light” personality; it is of light-tasting and refreshing profile which relieves you from the fear of gaining weight! Both VITA LIGHT Lemon Tea and VITA LIGHT Chrysanthemum Tea are offered. VITA LIGHT drinks, less than 3 calories*, great tasting and you do not have to worry about getting fat!
* Per 100mL

VITA Lemon Tea

When you think of VITA, VITA Lemon Tea comes up in your mind immediately. Launched since 1979, it enjoys long-standing support of Hong Kong people, and has secured market leadership throughout these years. Unique lemon flavour blended with red tea gives you a memorable drinking sensation.

Each cup of lemon tea contains Vitamin C of each day what we need. It's cheap and helps you to relax.
Nurtur of Lemon Tea

Each lump of cube sugar (each one 4 gram sugars) have 16 calories
Lemon Tea(Vita) 250 ml 137.6 calories
Lemon Tea(Nestle) 350 ml 124.8 calories

Ice Rush Lemon Tea(Nestle) 340 ml 123.2 calories

檸檬是一種營養和藥用價值極高的水果，其中最主要的營養成分除了糖類以外，還有鈣、磷、鐵及維生素B1、維生素B2、維生素C、煙酸等，其味道之所以比其他柑橘類更酸、更苦，是因為其中有機酸的含量遠達6.4%，比橘子、橙子等水果高出十幾倍，此外，它還含有豐富的黃酮類、揮發油以及檸檬皮等營養物質。中醫認為，檸檬有“生津止渴，和胃降逆，化痰止咳”之功效，胃寒不和或體質偏寒，不想吃飯的時候，吃點檸檬可以起到一定的緩解作用。

現代營養學認為，檸檬具有很高的藥用價值。對愛美的女性來說，它首先是一種非常有效的減肥食物，餐後喝點檸檬調勻的水，非常有助于消化，但是，胃酸過多的人不宜食用。

其次，檸檬具有預防和減少糖尿病及腎病的作，這主要是因為其中含有一種特殊成分果酸檸檬酸，實驗證明，它可以大大減少糖尿病患者腎臟、腎臟以及血液中過酸化脂脢的含量。檸檬還能預防心血管病的食物，高血壓、心肌梗死患者常喝點檸檬飲料，對改善症狀有很大益處。

茶的功效：
（神農本草）中稱：茶味苦，飲之使人益思，少臥，輕身，明目。
（神農食經）說：茶茗久服，令人有力悦志。

陸羽（茶經）認為：茶之爲用，味至寒，為飲最宜，精行儉德之人，若熱渴凝悶，腦痛目眩、四肢痠、百節不舒、聾四五聾，與醒頭目，開胃久食，不受風寒，可療一切病消熱。

李時珍（本草綱目）記述：茶苦而寒，最能降火，火為百病，火降則上清矣。

茶的主要營養成分：
咖啡醣
多酚類化合物：它主要由兒茶素類、黃酮類化合物、花青素和酚酸組成，這是茶葉營養的主要活性成分，業已證明，他們具有防止血管硬化、降血脂、消炎抑菌、防輻射、抗癌、抗突變等多種功效。
維生素／維他命：茶葉種含有豐富的維生素類，包括維生素B、維生素C、維生素E和維生素K。
礦物質：如磷、鈣、銅、鎂、錳、鋅、銅和氟等。
氨基酸：茶葉中氨基酸種類已報告有25種，其中茶氨酸的含量最高。
Causes of Diabetes

Diabetes mellitus occurs when the pancreas doesn't make enough or any of the hormone insulin, or when the insulin produced doesn't work effectively. In diabetes, this causes the level of glucose in the blood to be too high.

In Type 1 diabetes the cells in the pancreas that make insulin are destroyed, causing a severe lack of insulin. This is thought to be the result of the body attacking and destroying its own cells in the pancreas - known as an autoimmune reaction.

It's not clear why this happens, but a number of explanations and possible triggers of this reaction have been proposed. These include:

- infection with a specific virus or bacteria;
- exposure to food-borne chemical toxins; and
- exposure as a very young infant to cow's milk, where an as yet unidentified component of this triggers the autoimmune reaction in the body.

However, these are only hypotheses and are by no means proven causes.

Type 2 diabetes is believed to develop when:

- the receptors on cells in the body that normally respond to the action of insulin fail to be stimulated by it - this is known as insulin resistance. In response to this more insulin may be produced, and this over-production exhausts the insulin-manufacturing cells in the pancreas;
- there is simply insufficient insulin available; and
- the insulin that is available may be abnormal and therefore doesn't work properly.

The following risk factors increase the chances of someone developing Type 2 diabetes:

- Increasing age;
- obesity; and
- physical inactivity.

Rarer causes of diabetes include:

- Certain medicines;
- pregnancy (gestational diabetes); and
- any illness or disease that damages the pancreas and affects its ability to produce insulin e.g. pancreatitis.
Benedict's Reagent (also called Benedict's solution or Benedict's test) is a reagent named after an American chemist, Stanley Rossiter Benedict. It is used as a test for the presence of reducing sugars such as glucose, fructose and maltose, or more generally for the presence of aldehydes (except aromatic ones). It is often used in place of Fehling's solution.

Benedict's reagent contains blue copper(II) sulfate (CuSO₄) which is reduced to red copper(I) oxide (Cu₂O) by aldehydes, also oxidizing them to carboxylic acids. The copper(I) oxide is insoluble in water and so precipitates.

Benedict's reagent can be made from 100 g sodium carbonate and 173 g sodium citrate dissolved in 850 mL water, to which a solution of 17.3 g copper(II) sulfate in 100 mL of water is slowly added, and the overall reagent made up to 1 litre.

**Chemical test**

To test for the presence of reducing sugars in food, the food sample is dissolved in water and about 5mL of the sample solution is added to 5mL of Benedict's reagent. The mixture is placed in a boiling water bath for 5 minutes and any precipitate formed is recorded as a positive result for the presence of reducing sugars in the food. Sucrose (household sugar) is a non-reducing sugar and thus does not react with Benedict's reagent. Sucrose can produce positive results with Benedict's reagent if heated with dilute hydrochloric acid prior to the test. Doing so hydrolyses the glycosidic bond to give the monosaccharides glucose and fructose.

Benedict's reagent can be used to test for the presence of glucose in urine. Glucose found to be present in urine is an indication of diabetes. 5mL of Benedict's reagent is mixed with 0.5mL of urine and the mixture is put in a boiling water bath for 5 minutes. The results are recorded like this:

<table>
<thead>
<tr>
<th>Precipitate</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>—</td>
</tr>
<tr>
<td>green</td>
<td>a trace</td>
</tr>
<tr>
<td>yellow</td>
<td>+</td>
</tr>
<tr>
<td>orange</td>
<td>++</td>
</tr>
<tr>
<td>red</td>
<td>+++</td>
</tr>
</tbody>
</table>

Once a reducing sugar is detected in urine, further tests have to be undergone in order to ascertain which sugar is present. Only glucose is indicative of diabetes.

**Quantitative reagent**

Benedict's quantitative reagent is used to determine how much reducing sugar is present. This solution forms as white precipitate rather than a red one and so can be used in a titration as follows:
- Accurately measure 25ml of Benedict's quantitative reagent and pour into a 100ml conical flask.
- Add 6g of anhydrous sodium carbonate, to keep the solution alkaline.
- Add a few anti-bumping granules and bring the solution to a gentle simmer.
- Pour the sample into a burette and allow the sample to run from the burette into the conical flask until all the blue colour has disappeared.
- Repeat twice more, but this time allow the bulk of the sample to run into the conical flask all at once; then when the end point is near let it drip in one drop at a time, and boil for 30 seconds between each addition.
- Average the results.

The titration should be repeated with 1% glucose solution instead of the sample in order to calibrate the Benedict's. The concentration of reducing sugar in the sample can be calculated by comparing the volume of 1% glucose solution needed to discolor the Benedict's with the volume of the sample that was needed to do the same.

It would be more appreciated if you can write out the steps in your own words (use simple words) and produce figures to help explain the steps of working.
When we started the project, we drank the lemon tea that we had selected (Vita lemon tea). Nescafé (iced), and we invited people to drink the lemon tea and wrote the feelings on whether they thought the lemon tea is sweet or not.

Here's our process during the drinking time:

It's so creative! It made me feel happy to feel much better.
The result after the people have drank the lemon tea

We can know that Vian is the sweetest lemon tea than the other brands of lemon tea from the graph below.

The results were that Vian was considered the sweetest brand of lemon tea.

<table>
<thead>
<tr>
<th>Type of Lemon</th>
<th>Average</th>
<th>People who chose it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nestle</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Nestle Code</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Vian</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>4.454.5</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>4.54.55</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>6.72.73</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2.1.9818</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1.6934</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

Here is the result after the people drank the lemon tea (5) is the sweetest, 1 is the least sweet.
Our apparatus

- Electronic balance
- Oven
- Filter paper x 1 (main filter paper used)
- Burner, tripod, wire gauze, test tube holder x 1
- Dilute HCl (Some is enough for all laboratory activities)
- 1 Litre bottle x 2 (2 L is enough for most experiments)
- Test tubes x 10 and stand
- Benedict's solution
- Lab beakers x some
- 25 ml beaker
- Apparatus: gas cylinder, pipette

Aim: To find out the sweetness between different types of lemon tea.

Is it too sweet?

Experiment by Benedict's solution
brocker. If sugar is present, the solution will turn into brick-red.

About 15 minutes later, we used the test tube holder to pull out the test tube from the

Then, we pull the test tube into a water bath.

First, we added 1ml sample juice and 2ml Benedict's solution to the test tube.

Experiment without adding acid:

H₂O

Red

1cm³ / 1mL sample juice

Benedict's solution

2 mL
Experiments with adding acid:

This is our result from the experiment of Benedict's solution.

It is Benedict's solution.
The filter paper will be used to determine the sweetness of the lemon tea. If the filter paper is wetter, it means the lemon tea is sweeter than usual. If not, it is less sweet.

Weigh the lemon tea to determine how much to use. Then, put the filter paper on the electronic scale to see how much it weighs. After weighing, boil the solution and filter it through the filter paper.
Process of the Lemon Experiment

We had a lot of things to discuss during the experiment because we have a limited time.

Research for the experiment

With an educational purpose, we had a lot of things to discuss during the experiment because we have a limited time.

We had a lot of things to discuss during the experiment because we didn't know how to use the experiment to find out the amount of sugar in the Lemon Tea. Our results showed that we had a lot of things to discuss during the experiment because we didn't know how to use the experiment to find out the amount of sugar in the Lemon Tea.

What did we learn during the experiment?

The cooperative property and how to use during the experiment.

Did everyone work properly?

The report of the lab was completed, so it's alright.

Will we do our experiments with the same care and also we had done our experiment for the experiment?

For the experiment, is it a success?

Of course, we did our experiments for one time but we didn't get to finish the experiment.

Have we done our experiments on time?

Should be noted.

Discussion on how many types of lemon tea we should use and what kind of lemon tea we should discuss on how many types of lemon tea we should use and what kind of lemon tea we should discuss on how many types of lemon tea we should use and what kind of lemon tea we should discuss on how many types of lemon tea we should use and what kind of lemon tea
Differences to the right

2) The colour intensity of the solution is detected by our eye only which is not very accurate.

3) The pores of the filter paper are not small enough. Therefore, some precipitate may still be able to pass through the filter.

1) Benzedrine solution is not in excess so that it cannot ensure that all the lemon tea's sugar molecules have completely reacted.

Our difficulties when we do the experiment:

Our difficulties when we do the interview:

Our difficulties when we do the interview:

1) Tasting whether the lemon tea is sweet or not is a personally feeling. Therefore, no accurate standard to measure if the solution is sweet or not. And the data may be a little bit inaccurate.

2) Different kinds of lemon tea have different flavour.

Sweeter than others?
Knowledge that we can't find in the text book.
Because we think that we can learn lots of
We all look forward to the next cooperation,
We know how to choose the healthiest one to drink.
Moreover, we know the degree of
For doing the laboratory work.
Success, like, helping each other during the time
cooperate to other, so that the project can be
other than before. We learn that we must be
After this project, we more understand

Feeling
1. Yuk Hei Tung (40)
2. Ip Ho Ching Phoebe (25)
3. Luk Wing Kei (29)
4. Mak Chi Sum (30)
5. Tang Tia Yin (32)
6. Yau Cheuk Lam (38)

Name List

2D
has the person pictured?