What type of fruit juice provides the most vitamin c? essay sample

In my investigation I plan to find out how much vitamin C there is in orange juice, pineapple juice and tropical juice and then compare my results to find out which juice has the most vitamin C. The independent variable is the type of juice and the dependant variable is the volume of fruit juice needed to decolourise 1cm3 Of 1% DCPIP solution. DCPIP solution can be used to measure the amount of vitamin C in each juice as an antioxidant (like vitamin c) reduces the blue dye, DCPIP changing it from blur to colourless.

Method

1) Pipette 1cm3 Of 1% DCPIP solution into a test tube

2) Fill a burette with the 1% vitamin C solution and position it above the test tube with DCPIP, allowing the vitamin C solution to decolourise the blue DCPIP drop by drop, shaking the test tube gently. Record the exact amount of vitamin C solution needed to decolourise the DCPIP. Repeat the procedure three times and then average the results. 3) Repeat the procedure using the fruit juices instead of the 1% Vitamin C solution. 4) Calculate the mass of vitamin C that is required to decolourise 1cm3 of 1% DCPIP solution (multiply the amount of vitamin C solution needed to decolourise the DCPIP in cm3 by 10 as there’s 10mg of vitamin C in 1cm3 of 1% vitamin C solution) 5) Present finding in a table, stating which fruit juice provided the most vitamin C

Diagram

Control variables

* Volume of DCPIP

* Concentration of DCPIP

* Type/shape of test tubes

Risk assessment

Hazard| risk| Level of risk| Emergency measures| prevention| Glass test tubes breaking| Injury from getting cut by glass| Medium| Seek medical attentionAnd Use bandages| Use test tube racks Keep test tubes away from the edge of the table to prevent them from falling over.| Allergic reaction to juices/DCPIP| A rash or another sign of an allergic reaction| small| Seek medical attention| Avoid contact with the liquidsDon’t sniff or drink any of the liquids used.| Liquids/chemicals going into the eyes| Possible damage to eye| Medium| Rinse eyes with cold water | Wear goggles | Burette breaking| Injury from getting cut by glass| Medium| Seek medical attentionAnd Use bandages| Secure burette with a clamp |

Result

Juice| Volume of juice needed to decolourise 1cm3 Of 1% DCPIP solution (ml)| Amount of vitamin C (mg)| Amount of vitamin c/ml(mg/ml)| 1% vitamin C solution| 1. 8| 18| 1|
Apple juice| 6. 5| 65| (18/6. 5) = 2. 77|
Tropical juice| 2. 7| 27| (18/2. 7) = 6. 67|
Pineapple juice| 1. 3| 13| (18/1. 3) = 13. 85|

From these result we can see that Pineapple juice has the most vitamin C with 13. 85mg/ml meaning that the pineapple juice has more vitamin c per ml then the apple juice and the tropical juice, so a lower volume of pineapple juice was needed to decolourise the DCPIP. Apple juice had the least vitamin C with only 2. 77mg/ml and therefore needed more juice to decolourise the DCPIP as there was less vitamin C per ml. To improve the reliability of the

results the procedure must be repeated many times for each juice in order to spot and eliminate any anonymous results. Also all the control variables must be strictly followed so that the test is fair and nothing but the independent variable affects our results. Possible errors that may affect our results are human error, for example, when the DCPIP is completely decolourised is subjective, so to reduce the effect of this error on our results the same person should decide when it’s clear each time, or get a light sensitive reading. To improve accuracy we could use pipettes that measured to a smaller scale.