Measurement of pH and Titratable Acidity

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I. Materials

A. Required: pH meter or phenolphthalen, burette, burette clamp and stand, gram scale, graduated cylinder, beakers, 0.1N NaOH solution

B. Optional: magnetic stirrer & stir bar, automatic titrator

II. Procedure

A. Obtain at least 50 mls of clear juice by one of the following methods:

1. Cut fruit, press with a hand press, and filter through cheesecloth, or
2. Cut fruit into a blender, homogenize, centrifuge slurry, and pour off clear liquid for analysis.

** Sugar levels often vary within the fruit, being higher at the stem-end and lower at the calyx-end. For this reason, it is important to use longitudinal slices of fruit (from end to end) when sampling.

B. Make sure samples are at room temperature before taking measurements.

C. Measure the pH of the samples with a pH meter and record the value.

D. For each sample, weigh out 6 grams of juice into a 100 ml beaker.

E. To each sample, add 50 mls of water.

F. Titrate each sample with 0.1 N NaOH to an end point of 8.2 (measured with the pH meter or phenolphthalen indicator) and record the milliliters (mls) of NaOH used.

G. Calculate the titratable acidity using the following formula:

$$\% \text{ acid} = \frac{[\text{mls NaOH used}] \times [0.1 \text{ N NaOH}] \times [\text{milliequivalent factor}] \times [100]}{\text{grams of sample}}$$

Commodity	Predominant Acid	Milliequivalent Factor
Stone fruit, apples, kiwifruit	Malic Acid	0.067
Citrus	Citric Acid	0.064
Grapes	Tartaric Acid	0.075