北京吉天直链淀粉仪简易操作指南

标样配制步骤

除注明者外均为分析纯，水为蒸馏水。

1) 氢氧化钠分析纯，准确标定的 1mol/L 的 NaOH 溶液；
   称取 4g 氢氧化钠固体，溶入 100mL 的蒸馏水中，放入容量瓶中。
2) 醋酸分析纯，准确标定的 1mol/L 的 HAC 溶液；
   用纯醋酸 6mL，用蒸馏水稀析至 100mL。
3) 碘储备液及碘试剂；
   称 2g 碘（分析纯）和 20g 碘化钾（分析纯）用蒸馏水溶解并稀析至 100mL，即为碘储备液。取 10mL 碘储备液稀至 100mL，即为碘试剂。
4) 氢氧化钠分析纯，准确标定的 0.09mol/L 的 NaOH 溶液；
   取 9mL 1mol/L 的 NaOH 溶液，用蒸馏水稀释至 100mL，即为 0.09mol/L 的 NaOH 溶液。

基线校准

取一个 100mL 的容量瓶，加入 0.09 mol/L 的 NaOH 溶液 5mL 放入 100mL 的容量瓶中作为空白，然后依次加入 50mL 蒸馏水、1mL 1mol/L 的醋酸 、1mL 碘试剂，用蒸馏水定容至 100mL 后显色 10 分钟。

待测样品测量

（1） 样品分散：称取 0.1000g 粗淀粉的样品于 100ml 容量瓶中，加 1ml 无水乙醇，充分湿润样品，再加入 9ml 1mol/L 氢氧化钠溶液于沸水浴中分散 10 分钟，迅速冷却，用水定容。

（2） 脱脂：取 20ml 分散液于 50ml 具备刻度试管中，加入 7-10ml 石油链，间歇摇动 10 分钟，静止 15 分钟，分层后用连接在水泵上的吸管抽吸，吸去上部石油醚层，重复以上操作 2-3 次（精米脱脂二次，玉米、谷子须脱脂三次）

（3） 取待测样品溶液 5mL，放入 100mL 的容量瓶中。依次加入 50mL 蒸馏水、1mL 1mol/L 的醋酸 、1mL 碘试剂。用蒸馏水定容至 100mL 后显色 10 分钟。用 DPCZ-Ⅱ型直链淀粉测定仪进行测定其直链淀粉含量。

直链淀粉测定软件使用方法

1. 将直链淀粉测定仪的吸管用卡子卡好，确保卡子压紧吸入管；
2. 启动计算机，运行“运行直链淀粉检查”软件；
3. 整个系统预热 20 分钟；
4. 串口选择；
5. 校准基线；方法：点击【基线校准】按钮，之后按提示对话框即可；
6. 测量已知样品；方法：点击【标样测量】按钮，之后按提示对话框即可；
7. 测量待测样品；方法：点击【样品测量】按钮，之后按提示对话框操作即可；
8. 测量完毕，保存测量结果。方法：点击【保存结果】按钮，输入需要保存的文件名，

已知标样和待测标样的直链淀粉的值就保存在此文件中；

9. 查看已经测量的结果；方法：点击【读取测试结果】按钮，打开需要读取的文件名称，该文件中待测样品的信息就在待测样品列表框中；
10. 生成结果报表文件；方法：点击【生成报表】按钮，可以将当前待测样品列表框中的待测样品信息以报表的形式保存成一个结果文件（软件保存结果不包括吸光度），该文件可以通过记事本打开并打印；
11. 检测结束后将直链淀粉仪的吸入管卡子放开。

注意：仪器开机后蠕动泵就会不停工作，可以吸入空气。每次溶液开始测量时，要确保已经吸入足够量的待测液，也就是废液管已经开始排除待测液时再点击“确认”。

Straight-chain starch tester Operation Manual

Reagent preparation

1. An analytically pure, accurately calibrated 1 mol/L NaOH solution of sodium hydroxide.
Weigh 4 g of sodium hydroxide solid and dissolve in 100 mL of distilled water.
2. Sodium hydroxide analytically pure, accurately calibrated 0.09 mol/L NaOH solution.
Take 9mL of 1 mol/L NaOH solution and dilute it to 100mL with distilled water, which is 0.09 mol/L NaOH solution.
3. Analytically pure, accurately calibrated 1 mol/L HAC solution of acetic acid.
6mL of pure acetic acid, diluted to 100mL with distilled water.
4. Iodine stock solution and iodine reagent;
Weigh 2g of iodine (analytically pure) and 20g of potassium iodide (analytically pure) and dissolve with distilled water and dilute to 100mL, which is iodine reserve solution. Take 10mL of iodine reserve solution and dilute to 100mL, that is, iodine reagent.
5. Potato straight chain starch standard solution: weigh 0.1000g of straight chain starch with 100% purity, add 1mL of anhydrous ethanol to moisten the sample, then add 9mL of 1mol/L sodium hydroxide solution and disperse in a boiling water bath for 10 minutes, cool rapidly and then fix the volume with water to 100mL.
6. Branched chain starch standard solution: weigh 0.1000g of 100% purity of branched chain starch, put it into a 100mL volumetric flask, add 1mL of anhydrous ethanol to moisten the sample, then add 9mL of 1mol/L sodium hydroxide solution in a boiling water bath for 10 minutes, cool rapidly, and then fix the volume with water to 100mL.
7. Sample solution to be tested. The sample to be tested was sieved with 80 mesh sieve, weighed 0.1000g of the sample to be tested, put into a 100mL volumetric flask, added 1mL of anhydrous ethanol to moisten the sample, then added 9mL of 1mol/L sodium hydroxide solution and dispersed in a boiling water bath for 10 minutes, cooled rapidly, and then fixed the volume with water to 100mL.

Measurement of the sample to be measured

1. Baseline calibration
5mL of 0.09mol/L NaOH solution, then add about 50mL of distilled water, 1mL of 1mol/L acetic acid and 1mL of iodine reagent in turn, and fix the volume with distilled water to 100mL and develop the color for 10 minutes.
2. Mixing calibration curve plotting
After the baseline calibration, the mixed calibration curve (standard working curve) was drawn with 1mg/mL potato straight chain starch standard solution 0, 0.25, 0.50, 1.00, 1.50, 2.00mL, and then add branched chain starch standard solution 5, 4.75, 4.50, 4.00, 3.50, 3.00mL in turn to make 6 points of the standard curve with a total of 5mL Then add about 50mL of water, 1mL of 1mol/L acetic acid and 1mL of iodine reagent to each standard in turn. Fix the volume with water to 100mL and then develop the color for 10 minutes. The measurement was carried out by DPCZ-Ⅱ straight chain starch tester, and the standard working curve was drawn and given by the system software.

3. Measurement of the sample to be measured

(1) Sample dispersion: weigh 0.1000g of crude starch, add 1mL of anhydrous ethanol, wet the sample thoroughly, then add 9ml of 1mol/L sodium hydroxide solution and disperse in a boiling water bath for 10 minutes, cool rapidly, and fix the volume with water to 100mL.

(2) Degreasing: take 20mL of dispersion in a 50mL corked test tube, add 7-10ml of petroleum ether, shake intermittently for 10 minutes, stand for 15 minutes, stratify and aspirate with a pipette attached to the pump (you can also use a dropper to aspirate), aspirate the upper petroleum ether layer, repeat the above operation 2-3 times (the second time to degrease the refined rice, corn, grain must be degreased three times)

(3) Take 5mL of the sample solution to be tested, add 50mL of distilled water, 1mL of 1mol/L acetic acid and 1mL of iodine reagent in turn. Fix the volume with distilled water to 100mL and develop the color for 10 minutes. The straight chain amylose content was measured by DPCZ-Ⅱ straight chain amylose tester.

How to use the straight-chain starch tester software

1. Snap the inhalation tube of the straight-chain starch tester with clips and make sure the clips are pressed against the inhalation tube.
2. Start the computer and run the software of "straight chain starch test".
3. Warm up the whole system for 20 minutes.
4. Select the serial port.
5. Calibrate the baseline: method: click on the [Baseline Calibration] button, follow the dialog box, you can perform the baseline calibration.
6. Measuring a known specimen: method: click the [Specimen Measurement] button, and then operate according to the prompt dialog box.
7. Measure the sample to be measured. Method: Click the [Sample Measurement] button, and then follow the dialog box.
8. After measurement, save the measurement results. Method: Click the [Save Results] button, enter the file name to be saved, and the straight chain amylose values of the known specimen and the sample to be measured will be saved in this file.
9. View the already tested results Method: click the [Read Test Results] button, open the file name that needs to be read, and the information of the sample to be tested in this file will be opened in the sample to be tested list box.
10. Generate the result report file method: click [Generate Report] button, save the information of the sample to be tested in the current sample list box in the form of a report into a result file (the software saves the result without absorbance), the file can be opened and printed through Notepad.
11. Release the inhalation tube clip of the straight chain starch tester after the test.

Note: The peristaltic pump will keep working as soon as the instrument is turned on and can suck in air. Each time the solution begins to measure, make sure that you have inhaled enough liquid to be measured, that is, the waste tube has begun to discharge the liquid to be measured before clicking "Confirm".