

Separation and Analysis of Some Sugars by Using Thin Layer Chromatography

AIM- The aim of the experiment is to do the separation and analysis of some sugars by using Thin Layer Chromatography

BACKGROUND-

Great attention has been given recently to some relatively rapid techniques of analysis. Thin layer chromatography (T.L.C.) is already accepted and established as a laboratory tool for routine work. Its low cost, ease, and rapidity along with its capacity for separating and identifying small quantities of compound mixtures make the technique an important tool for research as well.

The objective of this investigation was to adapt a method for separation, identification, and approximation of different sugars in beet processing liquors, thick juice from storage, and beet storage samples.

REQUIREMENTS-

1. Glass plates are precoated with 0.25 mm dry silica gel.
2. Solvent system which consists of a mixture of chloroform, acetic acid, and water (3:3.5:0.5) by volume, respectively.
3. Spraying agent is made from 1 gram diphenylamine and 1 ml of aniline in 100 ml acetone. This mixture is further mixed with 85% orthophosphoric acid prior to use (10: 1 v/v, respectively).

PROCEDURE-

Sample is applied. Then the plate is dried in air for approximately 30 minutes. The solvent system irrigated within the ascending direction in a tight container. The solvent is allowed to move upward about 12.5 cm. This usually requires 90 minutes.

The plate is removed from the tank. Then it is kept for drying in air for about 30 minutes. The plate is placed back in the same developing solvent and let the solvent to move in the same direction to the same distance of 12.5 cm. This usually takes 45 minutes. The plates should then be dried in air for approximately 30 minutes.

CONCLUSION-

Thin layer chromatogram of some standard sugar solutions which involve glucose, fructose, sucrose, raffinose, and a standard invert solution (0.5 % each of glucose and fructose). It also includes a diluted thick juice sample (26.9 in 100 ml) and a diluted diffusion juice sample (1:1 by volume). Figure 3 is a thin layer chromatogram of standard sugar solution (0.5% of glucose, fructose, and sucrose); and also some beet storage samples (diluted 1:1 by volume) It should be pointed out that the conventional single development technique when using

cellulose is recoated plates resulted In sucrose tailing which interfered with the determination of other sugars. On the other hand, the combination of double development and silica gel plates gives separations with minimum or no sucrose tailing and with improved resolution of other sugars. Direct visual comparison with known standards provided reliable semi-quantitative information. If greater accuracy is required on quantitative analyses, the intensity of the spots may be measured by transmission densitometry. It should be pointed out that this method is most suitable for the detection of many carbohydrates present in beets and in factory juices. Because of the simplicity of the method and the low cost of the equivalent used, it is recommended for use in support of beet storage studies, thick juice analysis, and screening of agriculture research samples.

The distance moved by glucose,.....,.....,..... andare cm and cm respectively, and the solvent iscm

Rf value of glucose is

Rf value of fructose is

REFERENCES-

1. Farag S. Separation and Analysis of Some Sugars by Using Thin Layer Chromatography. Journal of the A.S.S.B.T. 1978: 251-254.