

Pectinesterase and Pectin in Commercial Citrus Juices as Determined by Methods Used At the Citrus Experiment Station

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INTRODUCTION

The spectacular development and production of frozen concentrated orange and grapefruit juices during the past 10 years has brought about increased interest in the chemical composition of citrus juices. Prevention of gelatin and clarification in concentrated citrus juices is of major importance to processors, since product quality is affected and economic loss may occur. The desirable "cloud" is retained and the undesirable formation of gel lumps is prevented by protecting the natural pectin found in the extracted product from alteration by the enzyme, pectinesterase (PE). Pectin is the naturally occurring colloidal stabilizer that gives citrus juices a viscosity or consistency termed "body" by the fruit juice industry. When the pectin colloid is altered by the activity of pectinesterase, the juice clarifies and becomes "watery", resulting in settling of the colloidal suspended material as well as rapid separation of the suspended water-insoluble solids called pulp.

For some time the authors have given much attention to the study of PE activity and the pectic substances in citrus juices and concentrates. The importance of PE activity and of pectin stability to the quality of frozen concentrated citrus juices has made it desirable to develop and apply procedures for determining PE activity and the kind and quantity of pectic substances in citrus products. Thus, the purpose of this bulletin is to present the methods found to be best suited for measurement of PE activity, for the extraction of pectic substances, and for estimating the extracted pectic substances.

LITERATURE SURVEY

Pectinesterase.—Though the chemistry of enzymic demethylation had been known for many years, no reports dealing with a quantitative study appeared in the literature until 1937 when Kertesz (10)¹ proposed a method for the determination of PE

¹ Italic figures in parentheses refer to Literature Cited.