

ESTIMATION OF CAFFEINE CONTENT FROM SOFT AND ENERGY DRINKS OBTAINED FROM REGIONAL MARKET BY UV SPECTROSCOPY AND TLC.

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Abstract: This research is for to estimate the concentration of caffeine in soft drinks and energy drinks. In pure form, caffeine is a crystalline white powder moderately soluble in water and in a wide range of organic solvent such as ethanol, ethyl acetate, methanol, dichloromethane, chloroform etc. The caffeine is determined by using UV-Visible spectroscopy method using dichloromethane as an extracting solvent at 273nm wavelength. The method was found to be fast, simple, cost effective and environmental friendly for the determination of caffeine in soft drinks with satisfactory results. Caffeine is found in many beverages such as coffee, tea, energy drinks and colas, which make the drinks addictive. Caffeine content in various energy drinks and beverage varies from 10 to 50 mg of caffeine per serving; however the US Food and Drug Administration (FDA, 2006) limits the maximum amount in carbonated beverages to 6 mg/oz. Large amount of caffeine consumption can cause physiological and psychiatrically dependence. The aim of this study is to determine the concentration of caffeine in soft drinks and energy drinks brands available in India to ensure whether the caffeine concentration in the follow soft drinks & energy drinks as per FDA recommendation or not. And other purpose of this research is to find erosion property of caffeine by determining buffer capacity. This research also helps to identify purity of caffeine by TLC (By measuring Rf value of sample compared with standard caffeine).

Keywords: Caffeine, soft drinks & energy drinks, UV Spectroscopy, TLC.

INTRODUCTION: Caffeine is a frequently used ingredient of energy drinks. It is added as a flavoring agent and to make the drinks addictive. Caffeine is a bitter in taste, white crystalline xanthenes alkaloid that acts as a psychoactive stimulant drug and a mild diuretic. It is an alkaloid of methylxanthine family. The methylxanthenes caffeine (1,3,7-trimethylxanthine), theobromine (3,7-dimethylxanthine), and theophylline (1,3-dimethylxanthine) can be normally found in colanuts, coffee beans, cocoa beans, tea leaves, mate leaves and other kinds of plants. Caffeine serves as an ingredient in many carbonated soft drinks including colas, pepper-type beverages, and citrus beverages. Pure caffeine occurs as odorless, white, fleecy masses, glistening needles of powder. Caffeine has drawn more attention in the past decades due to its physiological effects beyond that of its stimulatory effect. The Food and Drug Administration (FDA) defines caffeine as a generally recognized as safe (GRAS) substance. However, FDA specifies that the maximum amount in carbonated beverages is limited to 0.02% (FDA, 2006).⁽¹⁻³⁾

STRUCTURE OF CAFFEINE:



Figure no.1 Structure of caffeine

Method Estimation Caffeine In Drinks Manual

M Planty



Method Estimation Caffeine In Drinks Manual:

The book delves into Method Estimation Caffeine In Drinks Manual. Method Estimation Caffeine In Drinks Manual is an essential topic that must be grasped by everyone, from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Method Estimation Caffeine In Drinks Manual, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:
 - Chapter 1: Introduction to Method Estimation Caffeine In Drinks Manual
 - Chapter 2: Essential Elements of Method Estimation Caffeine In Drinks Manual
 - Chapter 3: Method Estimation Caffeine In Drinks Manual in Everyday Life
 - Chapter 4: Method Estimation Caffeine In Drinks Manual in Specific Contexts
 - Chapter 5: Conclusion
 2. In chapter 1, this book will provide an overview of Method Estimation Caffeine In Drinks Manual. The first chapter will explore what Method Estimation Caffeine In Drinks Manual is, why Method Estimation Caffeine In Drinks Manual is vital, and how to effectively learn about Method Estimation Caffeine In Drinks Manual.
 3. In chapter 2, the author will delve into the foundational concepts of Method Estimation Caffeine In Drinks Manual. This chapter will elucidate the essential principles that need to be understood to grasp Method Estimation Caffeine In Drinks Manual in its entirety.
 4. In chapter 3, the author will examine the practical applications of Method Estimation Caffeine In Drinks Manual in daily life. The third chapter will showcase real-world examples of how Method Estimation Caffeine In Drinks Manual can be effectively utilized in everyday scenarios.
 5. In chapter 4, the author will scrutinize the relevance of Method Estimation Caffeine In Drinks Manual in specific contexts. This chapter will explore how Method Estimation Caffeine In Drinks Manual is applied in specialized fields, such as education, business, and technology.
 6. In chapter 5, this book will draw a conclusion about Method Estimation Caffeine In Drinks Manual. The final chapter will summarize the key points that have been discussed throughout the book.
- The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Method Estimation Caffeine In Drinks Manual.

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