

ESTIMATION OF CAFFEINE CONTENT FROM SOFT AND ENERGYDRINKS 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 psychiatric 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 white crystalline xanthine alkaloid that acts as a psychostimulant drug and a mild diuretic. It is an alkaloid of methylxanthine family. The methylxanthines caffeine (1,3,7-trimethylxanthine), theobromine (3,7-dimethylxanthine), and theophylline (1,3-dimethylxanthine) can be normally found in coffee beans, tea leaves, mate leaves and other kinds of plants. Caffeine serves as the ingredient in many carbonated soft drinks including colas, pepper-type beverages, and citrus beverages. Pure caffeine occurs as Odorless, white, foamy mess; glistening needles of powder. Caffeine has drawn more attention in the past decade 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 0.002% (FDA, 2006).^{1,2}

STRUCTURE OF CAFFEINE:



Figure no.1 Structure of caffeine

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web feb 11 2002 every spring at mountlake terrace high school near seattle students in eeva reeder s geometry classes work feverishly to complete an architectural challenge design a 2 000 student high school to meet learning needs in 2050 fitting it on a given site in a period of six weeks students must develop a site plan a scale model

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web day 1 today you will learn about creating a model of our dream house and practice some math suggested duration 20 minutes activity and description suggestion it is recommended that the learner completes the draw and

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web this math geometry city project will have your students excited and interested for math class your students will become engaged as they form construction companies and then are asked to design a city based on geometry concepts here are some sample requirements the perimeter of your city proposal can be no greater than 156 inches

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web this editable project includes a rubric with the following 6 parts part 1 exterior design just for fun students will draw or insert an image of the exterior of their dream home to help hook them into the project part 2 floor plan students will map out a floor plan for the rooms in their house

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web note your model must match your floor plan drawing and include furniture and flooring part 4 total area and cost you need to figure out the total area of your dream house you will also need to figure out the total cost for the type of flooring dream house project summary 100pts architect 50pts part i floor plan drawing 25pts

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web this project is great for assessing middle school junior high geometry skills such as area perimeter scaling concepts 3d shape drawing and is very real world including the money math ratio standards such as budgeting loans and interest

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web scale drawings and similar figures are a huge part of middle and high school geometry in this project students create blueprints for a house they must include the scale and the square footage of the actual house

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web high school geometry projects can help students apply theoretical concepts to real life applications of geometry this not

only helps students understand and remember principles of geometry but also stimulates their interest and their desire to continue studying mathematics and science subjects