

Legal drugs and toxic substances



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Lawful toxic substances are legal drugs that can be purchased without a prescription and purchased at various locations such as supermarkets, restaurants, bars, etc. These have been approved as legal substances by the Single Convention on Narcotic Drugs. ⁴⁴

There are several types of legal toxic substances among which are the stimulants, these are those that affect the central nervous system causing the individual who consumes an increased alertness, euphoria and fullness. Although these produce favorable feelings for the person who uses it, cause various adverse effects among which were: insomnia, anorexia and sometimes psychotic symptoms. Within legal stimulants have caffeine, energy drinks and nicotine. ⁴⁵

In addition to these substances, other depressant calls the function on the central nervous system is to decrease the speed with which information travels from the brain to the body. Among them are one of the substances most commonly used worldwide alcohol. ⁴⁶

3. 2 Types of licit substances toxic

3. 2. 1 Caffeine

Inside we mentioned stimulants caffeine, an alkaloid 1, 3, 7-trimethylxanthine type, this is found in coffee, tea, mate, soft drinks and chocolate. ⁴⁷ Caffeine has a density of 1. 2g / cm ³, a volatility of 0. 5% and a vapor pressure of 101kPa to 178C. It displays a pH of 6. 9, has a water solubility of 2. 17% and has a boiling point of 178C. ⁴⁸

Caffeine is a substance that has been used worldwide for thousands of people who often need the effects of this. It was discovered in the ninth century in Arabia and was first worked in Ethiopia. It may be obtained naturally by extraction. The following table lists the various sources from which can be extracted caffeine is.

As the pharmacokinetics of caffeine has a way of absorbing the first degree and a way of removing the first degree. In a study conducted in order to investigate the pharmacokinetics of this, 500 people who were given doses of 204, 340 and 476 mg every 6, 8 or 12 hours respectively were analyzed. Caffeine for this purpose, was administered in pill form. This study found that the highest peak in the concentration of caffeine was observed at doses of 340 mg administered every 8 hours plus a half-life of 4.3 ± 1.5 hours in participants was obtained. Caffeine in turn is metabolized by CYP1A2, has a bioavailability of 100%, the maximum plasma concentration obtained within 30-45 minutes fast and has a volume of distribution of 0.6-0.7 L / kg. ^{49. 50}

3. 2. 1. 2 Pharmacodynamics

Caffeine acts primarily on the central nervous system. Besides having activity on the brain, this has action on the urinary, cardiovascular and skeletal systems. ⁵¹

3. 2. 1. 3 Mechanism of Action

Moreover, caffeine is a nonselective adenosine receptor antagonist (AR). Its mechanism of action is developed as follows: The main receptors that caffeine's main objective is to inhibit the A_1R and A_{2R} , giving as a result

an increase in dopamine release and these are responsible for turn stimulate dopamine receptors (DR). It is thought that the interaction of these receptors has any role in regulating the function of the basal ganglia. ⁵²

Caffeine has also other mechanisms of action mechanism mentioned above such as the inhibition of phosphodiesterases (PDE), intracellular calcium release and the blockade of GABA. Inhibiting ⁵³ phosphodiesterases These cause an increase in the quantity of intracellular cyclic AMP (cAMP) and cGMP in some tissues. It is said that PDE4 is the one mainly related methylxanthines activation in cardiac muscle relaxation in smooth muscle and in the process of decreasing inflammation and immune activity. ⁵¹

The primary characteristic of caffeine is its stimulatory activity of the central and peripheral nervous system. Caffeine is an amphipathic molecule that is hydrophilic and hydrophobic, which allows it to be soluble substances in polar and nonpolar solvents. Thanks to this property can pass the blood-brain and placental barriers. ⁵⁴

3. 2. 1. 4 Types of caffeinated substances

Tea

It is a caffeinated beverage obtained from boiling water placed on tea leaves, *Camellia sinensis*. There are two main varieties, the small-leaved China plant (*C. sinensis sinensis*) and the large Assam plant (*C. sinensis assamica*). The teas are classified by region of origin, the size of the processed leaf and the manufacturing process. ⁵⁵

The *Camellia sinensis* is one of the most used worldwide. Must be 78% of the population using black tea infusions ingested, 20% use green tea and 2% oolong tea used. Green tea has abundant flavonoids, finding within these catechins and their derivatives.⁵⁶

Green tea is very useful since their intake lowers serum cholesterol and blood pressure, prevents oxidation of low density lipoprotein (LDL) and also a very important feature is its property to reduce the risk of cardiovascular disease and cancer.⁵⁶ Among the various cardiovascular disease is preventable premature death, according to two Japanese studies consuming several cups of green tea a day reduces this risk. One mechanism by which acts to reduce this risk is dare decreasing proinflammatory cytokine appearance.⁵⁷

As already mentioned above, green tea has caffeine in their composition so that using this can cause insomnia, anxiety, irritability, upset stomach, nausea, diarrhea or polyuria. Green tea also has vitamin k in small quantities, by inhibiting the activity of anticoagulant drugs such as warfarin.

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The Chocolate

According to a study by Alvis, Perez and Arrazola to determine the textural properties of chocolate bars, this is a mass of dry cocoa and sugar particles finely suspended in cocoa butter. The fat contained in chocolate is what keeps it together, gives brightness, hardness, fracturability, heat stability, mouthfeel and flavor release.⁵⁹

Its main constituents are the flavonoids that are an antioxidant substance found in all types of chocolates except the white chocolate, cocoa butter, which serves as a skin moisturizer, a stimulant caffeine, theobromine important nutrient with activity in the heart and nervous system and phenylethylamine which stimulates the sense of good humor. ⁶⁰

It has been seen from the cocoa plant *Theobroma cacao* L., has favorable effects on cardiovascular disease. Among the positive actions that we have has cocoa improves endothelial function, inhibits platelet aggregation, scavenge free radicals, increases the availability of nitric oxide vasodilator, has anti-inflammatory properties and reduces oxidation of low density lipoprotein. ⁶¹

Although it has been seen that chocolate has several features that help the body, consumption in excess of this can become a problem. Among the various harmful effects it can produce excess chocolate are the following: Weight Gain and Heart Disease, saturated fat contained in chocolate increases blood cholesterol which increases the risk of a heart attack, diabetes and also caries, refined carbohydrates cause spikes in blood sugar that can cause the body to become insulin resistant. ⁶²

Refreshments 3. 2. 2

Soft drinks are flavored soft drinks that are sweetened, acidified and carbonating, they can also contain fruit juice and salt. The flavor of these is obtained from plant extracts and other aromatic substances. ⁶³ (another art Anup Kharde et al). According to Food and Drug Administration (FDA) “ non-

alcoholic carbonated beverages are safe, healthy, and information on the label is accurate. These have labels which must be written the name and address of the manufacturer, the total content, all beverage components arranged from having greater weight to smaller and chemical preservatives defining what they are used. “⁶⁴

3. 2. 2. 1 Content

Most soft drinks contain food additives that have no value and only added to enhance flavor, favor the appearance and increase its life in storage. Among the main additives used in soft drinks are: acidulants, which are used to manage acid food, they increase the perception of freshness, among these are also the colors that influence consumer choice dioxide carbon which gives the characteristic of these drinks gas, and conservatives used to make these last for a longer time without being damaged.⁶⁵

Mention should also sweeteners as part of these additives, they play the role of sugar but low or no calorie intake. Among these are aspartame, which is 200 times sweeter than sugar, with an acceptable daily intake of 40 mg / kg. Another sweetener is acesulfame K, as the former is 200 times sweeter than sugar and has an acceptable daily intake of 15 mg / kg, is also saccharin is 300 times sweeter and can be an acceptable daily intake 5 mg / kg. Finally among these are sucralose, its only produced from sugar, an acceptable daily intake is 15 mg / kg, and stevioside, of which only 4 mg / kg is considered an acceptable daily intake. This is exemplified in the following image.

On the other hand, the main heads of creating concentrated syrup flavoring and are the Coca Cola company 40% of the shares in the market and PepsiCo, Inc. with 33%, while 27% belongs to small companies. Being more specific, we have companies that are appropriate carbonated drinks market are: Coca-Cola Company with 28. 6%, PepsiCo, Inc. with 26. 8% and 8. 6% Dr Pepper Snapple Group. This industry is estimated at 47. 2 billion in the United States. ⁶⁶