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EVALUATION OF CURRENT CAFFEINE CONTENT OF COFFEE BEVERAGES: RECOMMENDATIONS FOR CLINICIANS REGARDING CAFFEINE EXPOSURE

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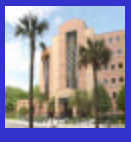


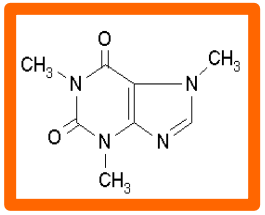
Background and Significance:

The use ofpsychostimulants is wide spread. In 1996 the World Health Organization held a summit where the " Epidemic of World Psychostimulant" use was discussed in detail (WHO Website - http://www.who.int/archives/inf-pr-1996/pr96-77.html, accessed April 18, 2003). The use of caffeine (Figure 1), sometimes viewed as the most innocuous member of this group, exceeds use of more widely publicized drugs (e.g. alcohol and cocaine) and may only be approached in severity of use by nicotine (WHO, 1996). The average intake in the United States of America is approximately 291 mg, or equivalent to several cups of coffee or cans of soft drinks (Kuczmarski et. al., 1997; Mandel, 2002). The dose of caffeine available in a common beverage is dependent on the type of beverage, brewing or production technique, and amount dispensed (Tanda and Goldberg, 2000). Caffeine-containing beverages are popular in part due to decreased fatigue, increased mental acuity and improved cognitive functioning following the intake of moderate doses (Tanda and Goldberg, 2000). Despite widespread use, most medical texts have no guidelines for intake. A daily intake of 1000mg can induce psychiatric symptoms in healthy adults and children. Peak plasma levels are usually reached within 15 minutes of ingestion (Smith 2002). The pharmacological effects of caffeine are complex and may cause misdiagnosis, leading clinicians to confuse caffeine intoxication with other naturally occurring psychiatric illnesses e.g. panic attacks. Excessive caffeine use may also result in the relapse of previously treated psychiatric illnesses or induce anxiety symptoms (Boulenger, 1984). Clinicians may not take an accurate caffeine history when interviewing patients because of the lack of an accepted method of accurately recording caffeine intake. Some clinicians order caffeine blood levels, however these measurements may be misleading due to the relatively short half-life of caffeine and its interaction with other substances e.g. nicotine. The SCID does not include caffeine in the substance abuse module, although lists it in the anxiety disorders module as an etiological substance of influence. The DSM-IV does not classify caffeine within substances for dependence thereby making it confusing for experts, academicians, and practitioners alike. As the popularity of commercial coffee stores has grown, so has the strength (in terms of mg of coffee per dispensed beverage) of the cup.

Methods:

Twenty-seven caffeinated and decaffeinated samples were purchased from retail coffee shops (*e.g.*, Big Bean®, Starbucks®, Dunkin Donuts®, Royal Farms®, Einstein Brothers® and Hampden Cafe®) in the Baltimore, Maryland area; both caffeinated and decaffeinated beverages were included. The caffeine content was determined in the beverages using liquid/liquid extraction and gas chromatography with nitrogen-phosphorous detection.

Figure 1.



Caffeine

Results:

The dose of caffeine in mgs was estimated for each beverage based on the usual volume dispensed. The dose of caffeine in the decaffeinated beverages ranged from trace amounts to a maximum of 35.5 mg. The minimum, maximum, and mean dose (mg) of caffeine found in caffeinated beverages was 58.1, 389.0, and 194.0 mg. Thus, individuals consuming multiple cups of a caffeinated beverage could consume caffeine in excess of 1000 mg.

Sample†	Serving Size (oz)	Caffeine (mg)
Espresso	1.4	75.8
Espresso	1.3	140.4
Espresso	1.9	165.3
Brewed and Blended, Regular	24	247
Brewed and Blended*	24	<35.5
Brewed and Blended	24	221.4
Espresso*	1.3	<35.5
Brewed, Organic	24	278.9
Brewed, French Roast	24	269.7
Brewed, Ethiopian	24	235.6
Brewed, Italian Roast	24	257.6
Brewed, Italian Roast*	24	<35.5
Brewed, Costa Rican	24	367.7
Brewed, Kenyan	24	307.3

Sample	Serving Size (oz)	Caffeine (mg)
Espresso	1.0	58
Brewed*	24	<35.5
Brewed	24	389.0
Brewed	24	338.6
Brewed*	24	<35.5
Brewed	24	215.1
Brewed*	24	<35.5
Espresso, Double	5.5	184.9
Brewed	24	309.5
Espresso	2.8	133.6
Brewed, Guatemalan	24	259.1
Brewed, Guatemalan*	24	<35.5

Big Bean®, Starbucks®, Royal Farms ®, Dunkin Donuts ®, Einstein Brothers ®, Hampden Cafe ®

†Different colors correspond to different stores
*Indicates decaffeinated beverage

Discussion and Conclusions:

Caffeine is the world's most commonly ingested stimulant. Use is widespread in most populations including patients with psychiatric illness. Although coffee and other caffeine containing beverages are popular among healthy individuals, their use in the psychiatric patient should be monitored. Accurate assessment of caffeine intake, especially in the new or relapsed psychiatric patient with anxiety or panic symptoms, is crucial. Caffeine may induce anxiety symptoms and caffeine may mask or mimic anxiety symptoms. How to take a caffeine exposure history is not an accepted part of the medical or psychiatric evaluation. The medical history/interview should include documentation of caffeine exposure based on the number of caffeine beverages consumed per day, and when possible, total caffeine (mg/day).

References:

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