IJBPAS, February, 2016, 5(2): 504-512

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

CAFFEINE – THE MOST ABUSED PSYCHO-ACTIVE SUBSTANCE (SURVEY CONDUCTED AMONG STUDENTS AND THEIR PARENTS)

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ABSTRACT

Coffee is the second most consumed beverage by the people after water of course. The only competition to it is the tea.

Until recently, the effect of coffee was mainly assigned to the presence of caffeine in it. In the past years, however, scientists increasingly recognize the role of antioxidants in it.

The study presents an analysis of the results of the use of coffee among 75 students and their parents.

Keywords: Caffeine, coffee, student, antioxidant

INTRODUCTION

Caffeine is a xanthenes alkaloid contained in the leaves and fruits of various plants – coffee, tea, guarana, cocoa, cola, etc. Caffeine enters the body via drinks (coffee, tea, energy and isotonic drinks), candy, additives for stimulation. Coffee is the second most consumed beverage by the people after water of course. The only competition to it is the tea.

Since the generation of free radicals is a process that cannot be stopped, it is necessary to strengthen antioxidant protection by additional reception of food

and beverages containing high antioxidant ability [1,2].

Until recently, the effect of coffee was mainly assigned to the presence of caffeine in it. In the past years, however, scientists increasingly recognize the role of antioxidants in it. The data from the studies of the content and the influence of coffee have proved a number of benefits, which the moderate consumption of coffee drinks brings to the body. Besides the familiar toning of the body and mind stimulating action, the scientists state that our usual cup of coffee and is our main source of antioxidants in the contemporary menu [2,3].

The study presents an analysis of the results of the use of coffee among 75 students and their parents.

Objective

The current study presents short historical notes about coffee and its characteristics, and analyzes the use of coffee / alcohol by students and their parents.

Source Material and Modalities

Object of the research are:

- classification of the sources of free radicals,
- some antioxidant properties of coffee,
- the coffee - as an antioxidant,
- The usage of coffee - among students and their parents.

The time of the study spans over the period from September 30, 2014 to May 30, 2015

Place of study - Medical College, at Medical University Plovdiv and Medical College - Branch Haskovo city, part from Tracian University - Stara Zagora. The study involved:

- First year students from the course study "radiologist" in Medical College at MU - Plovdiv - 23 students.
- Students in their first year in "Midwife" (19 students) and "Nurse - MS" (33 students) of Medical College - Branch Haskovo part from Trakia University - Stara Zagora.

In the study indirectly participate the parents of the surveyed students.

Research approaches used:

- systematic approach and critical analysis of the available scientific periodicals;
- mathematical and statistical, combined methods;
- poll-interview method.

RESULTS AND DISCUSSION

Much has been written and commented on the topic of free radicals. The theory and its importance for the body is raised by Denham Harman in 1950. Since then it undergoes many changes and additions. Although among scientists there are still

some disagreements concerning some mechanisms and the extent of their influence on certain cellular processes, it is adopted the believe that they play a key role in accelerating the aging of the body.

Free radical are called atoms, molecules or parts of molecules that possess an unpaired (one or more) electrons of some of the external electronic orbitals. That determines their high potential of interaction with other molecules in biological environments. Major biological importance's have the so-called "active" forms of oxygen. These are:

- hydroxide radicals
- hydrogen peroxides
- superoxide radicals
- singlet molecular oxygen

In biological systems the formation of free radicals occurs mainly as a result of some of the average elementary processes:

- hemolytic cleavage of covalent chemical bonds;
- single - electron redox processes;
- singlet - inwrought transitions (in electronic excitation of molecules);
- Exchange chemical reactions proceeding with the formation of radical intermediates.
- Sources of free radicals:
  - Internal sources - enzymatic reactions that serve as a source of free radicals;
  - External sources - of nonenzymatic reactions of oxygen with organic ingredients;
  - Physiological factors - psychic status (stress and emotions) and disease conditions[4,5,6].

The biological effects of free radicals are inherently limited to cytotoxicity, thus disturbing the morphology and function of cells. Induced cell toxicity thereof is carried out by different mechanisms: by lipid peroxidation, withdrawal of sulfhydryl groups, the polymerization of proteins, oxidation of guanine or other bases of DNA or inhibiting the activity of protein enzymes involved in biosynthetic processes.

Free radicals are considered pathogenic factor in a number of disease syndromes:

- cardiovascular diseases and syndromes;
- neurodegenerative diseases;
- noninfectious-inflammatory syndrome.

Ranking of the prestigious medical journal American Journal of Clinical Nutrition (AJCN) ranks coffee among the six most famous foods and products containing antioxidants. The latest research shows high bioavailability of antioxidants in

coffee (polyphenols) - surprisingly even more than many other drinks (coffee 200 mg - 100 ml, 115 mg green tea - 100 ml; fruit juice 34 mg - 100 ml).

The history of coffee goes back more than a thousand years ago. In those ancient times tonic qualities of coffee were perceived as a kind of religious ecstasy. The drink gained a mysterious reputation, shrouded in secrecy and associated with priests and healers. The discovery of coffee is associated with two legends:

According to the one, a goatherd noticed that his herd became livelier after consuming red berries of a wild bush. Curious goatherd himself tried those berries. Amazed by invigorating effect, he was spotted by a group of monks dancing with his goats. Soon the monks themselves began to boil the beans and use the liquid to keep them awake during the ceremonies, which lasted all night.

According to another story, a Muslim monk was condemned by his enemies to wander in the desert. During delirium, the man heard a voice that told him to eat the fruit of the coffee tree nearby. He tried to soften the beans in water, and when he failed, simply drank the liquid. Assuming survival and energy as a sign of Allah, he returned to his people, spreading the faith and the recipe.

The cultivation of coffee began in the fifteenth century. For centuries the Arab province of Yemen was the only source of coffee in the world. Demand was so great that the departure of the grains of the Yemeni port Mocha was heavily guarded. None fruitful tree was not allowed to leave the country.

Despite the restrictions, the Muslim pilgrims that went to Mecca, illegally imported coffee trees in their lands and soon the coffee plants spread across India.

Coffee came to Europe through Venice, where fleets traded perfumes, tea, paints and fabrics with Arab traders in the path of spices. Many European retailers are accustomed to drinking coffee overseas and brought it with them to their native lands. The beverage gained popularity when street vendors began selling it.

In the seventeenth century the Dutch introduced it to their colonies in Indonesia, and the French were the first who began to plant coffee in America. Today, coffee is the second most traded raw material in the world - it is only surpassed by oil.

The biggest part of the coffee is grown between the tropics of Cancer and Capricorn, in plantations in Africa and Arabia, Latin America and the Pacific Islands. Since each of these regions has different soils, climates and cultivation

methods, the coffees they produce differ greatly in taste [7,8,9,10,11].

The chemical composition of coffee is too complicated. The green coffee contains: 8.15% water; 11.3% protein; 4.14% mineral salts; 10.95% fat, and 7% of insoluble substances.

The aqueous acidic coffee has about 29% degree. It contains: 5.25% water soluble proteins; 1.99% caffeine; 5.7% chlorogenic acid; 5.3% sucrose and 10% unspecified substances.

In the process of roasting the coffee loses much of its water, but because of the gasification process it increases its volume. Weight loss reaches 23%. The nipples of coffee in small quantities contained malic acid, oxalic acid, pyruvic acid and citric acid [1, 2, 10, 11, 12].

The antioxidant properties of the coffee and the usage by the students we taught, gave us the idea for our survey whose results we bring to your attention.

Greater is the number of students aged under 25 - 63, over 25 years old are 12 students.

The parents of the students surveyed are divided into two groups - up to 50 and over 50 years of age. The first group includes 34 parents and the second - 19 parents.

23 of the respondents refrained from answering, because of ignorance of the age of their parents or unwillingness to share it.

All 19 midwives are female (Bulgarian legislation does not allow men to practice that profession). Out of 33 nurses 32 were women and 1 is medical brother. Radiologists are 15 women and 8 men.

The data indicates a feminization of those professions; such trends are seen in other professions, not only in Bulgaria.

The comparative analysis on the preferences of the students between coffee and alcohol we present in Table 1.

Evident from Table 1, the students definitely prefer coffee over alcohol. The same trend is also observed in their parents. One of the nurses did not answer for him and again from that specialization 4 respondents abstained from information about their parents. At home (question 4) 73 of the respondents have always coffee, 5 - always have and alcohol. Only one respondent refrained from answering. We performed a comparative study (question 5) regarding the use of coffee during the semester and session - Table 2.

More coffee the students, as well as their parents use during session. During the semester coffee consumed 32 of the respondents, while in session, this number is 43. The same distribution is observed for the parents of the respondents (when they were students), i.e. the use of coffee in the semester / session research is in favor of the session - 30 against 20 during the semester.

Most of the students (71) from the three subjects as well as their parents (68) prefer caffeine-containing drinks compared to alcohol-containing drinks (Table 3).

Questionnaire (question 7) provoked an opportunity to make a ranking of the use of the following caffeine containing drinks: coffee, Coke, Pepsi, tea (Table 4).

Table 1: Preferences coffee/alcohol

	Students		Parents – when they were students	
	Coffee	Alcohol	Coffee	Alcohol
Nurses	31	1	28	1
Midwifes	18	1	19	-
Radiologists	22	1	21	1

Table 2: Usage of coffee – term / session

	Students		Parents – when they were students	
	During semester	While in session	During semester	While in session
Nurses	16	16	9	12
Midwifes	6	14	3	7
Radiologists	10	13	8	11

Table 3: Caffeine/alcohol – containing drinks

	Students		Parents – when they were students	
	Caffeine containing drinks	Alcohol containing drinks	Caffeine containing drinks	Alcohol containing drinks
Nurses	32	1	31	2
Midwifes	18	1	17	2
Radiologists	21	2	20	3

Table 4: Usage of caffeine containing drinks: coffee, Coke, Pepsi, tea

	Students				Parents – when they were students			
	coffee	Coke	Pepsi	tea	coffee	Coke	Pepsi	tea
Nurses	20	8	2	9	22	7	2	6
Mid-wifes	13	5	1	4	15	1	-	1
Radio-logists	18	6	3	7	16	2	1	4

As the most commonly used caffeine drink, the students indicate coffee - 51 of respondents, followed by tea - 20 respondents, Coke (19) and Pepsi - 6 respondents.

The distribution within the parents of the students, surveyed, is identical. Greatest is the use of coffee - 53 parents, followed by the use of tea - 11 people, followed by Coke - 10 and three prefer Pepsi.

To clarify the above facts comes the answer of question 4 concerning the presence of coffee in the houses of the respondents. The presence of coffee machines in the school area facilitates the use of coffee. Coffee machines make it possible to use other caffeine containing drinks such as tea, with which we explain placing the tea second by usage

To determine whether the day of the students and their parents starts with coffee, tea, alcohol or other beverage we introduced question 8 (Morning, before / during, breakfast you use: coffee, alcohol, tea). Students surveyed do not use alcohol in the morning, only one student reported

alcohol usage in the morning by their parent.

And here again the greatest usage of coffee is: by the students - 69.33%, by their parents - 70.67%. Tea consumes 32% of the students and 28% of their parents.

The fact that in the morning they do not use alcohol reveals the focus and attention of the students at all activities during the day. This provides them with maximum participation opportunities in the learning process and sober assessment of reality.

The answer to question 9 "Do You drink coffee after 1400 hours / at night" indicates that the use of coffee is permanent (Table 5).

There are several students that did not answer, so that the sum of the affirmative and negative answers is not 100%.

The share of the students that use coffee after 14 hours / at night is biggest - 65.33%. After 1400 hours 29.33% of the students restrain from the use of coffee. 42 of the interviewed parents drank coffee after 1400 hours / at night - unlike the 29 who restrain from afternoon use.

Despite the apparent greater usage of caffeine containing drinks and in particular coffee drinks, we decided to ask question 10 on the use of alcohol (Table 6). We divided respondents into two age groups - "up to 18 years" and "18 years & beyond."

Unfortunately, the ones who started drinking alcohol before 18 years of age - 16 students, are more than those who started after 18 years of age - 6. Same is the distribution with the parents - started using alcohol before 18 years are 12 opposed to those using alcohol after 18 years - 10. Looking at the results, we see that the number of students drinking alcohol before 18 is greater than that of their parents. This confirms a worrying trend to reduce the age limit for the use of alcohol. In Bulgaria there is legislation on the sale and use of alcohol to minors.

We are interested in the status of excessive use of capsicum or caffeine – contained (Question 11) drinks by the respondent students, as they prepare for work in the healthcare field. Therefore we ask question 12 "Do you have situations when you suffered alcohol or coffee abuse?" (Table 7).

10 students reported for excessive abuse with alcohol by all 75 respondents (the largest number among them midwives); Abuse of coffee reported 45.33% (i.e. 34 students). According to the students, 9 parents suffer alcohol abuse and 19 - coffee.

Since specialty "Midwife" are only female students - the disturbing fact is that girls start drinking since early youth. This response can be interpreted in another

mode - perhaps extreme, eager to show extravagant behavior, mimicking some idol.

Eager to know if coevals of the respondents abuse coffee, tea, Coke, alcohol, we asked question 12, whose result we present in Table 8.

Excessive use of coffee reported 50.07 percent; the usage of tea is 6.67%, coca cola - 21.33% and alcohol - 29.33%. Therefore, in this aspect of the abuse with caffeine containing and capsicum drinks we can sort the listed drinks as follows: coffee, alcohol, coca cola and tea.

Table 5: Usage of coffee after 1400 hours/at night

	Students		Parents – when they were students	
	YES	NO	YES	NO
Nurses	19	12	16	15
Midwifes	14	4	12	6
Radiologists	16	6	14	8

Table 6: Usage of alcohol by the students / parents

	Students		Parents – when they were students	
	Up to 18	18 & beyond	Up to 18	18 & beyond
Nurses	6	2	7	3
Midwifes	5	1	1	5
Radiologists	5	3	4	2

Table 7: Alcohol / Coffee abuse

	Students		Parents – when they were students	
	alcohol	coffee	alcohol	coffee
Nurses	3	22	5	8
Midwifes	4	9	2	7
Radiologists	3	3	2	4

Table 8: Coevals, abusing Coffee, tea, Coke, alcohol

	Students		Parents – when they were students	
	coffee	Tea	Coke	alcohol
Nurses	16	3	5	9
Midwifes	13	-	5	5
Radiologists	9	2	6	8

CONCLUSIONS

- The coffee is in a leading position among caffeine containing drinks. Preferred drink for 66.67% of respondents and 70.66% of their parents.
- There is certain mimicry - the use of alcohol and caffeine containing substances (coffee). Students copy the behavior of their parents.
- The age limit for alcohol consumption among women is decreasing.
- Strict compliance with the legislation concerning the age limit for use of capsicum drinks.

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