

**2nd African Fine Coffee Conference
Livingstone, Zambia, 3-5 March 2005**

**COFFEE AND HEALTH: CONTEMPORARY RESEARCH FINDINGS
Pablo Dubois (ICO)**

Introduction

Coffee reached Europe, and very soon the New World, in the seventeenth century. Because of its wide popularity it very soon became a leading topic for medical research and serious studies can be found from the eighteenth century onwards. In these earlier times extravagant claims were made both in favour of coffee as being good for you and against.

In many cases there is clear evidence of prejudice and there is no doubt that some studies reflect a bias arising from the mere fact that drinking coffee is enjoyable.

The growth of consumer interest groups in the West in the second half of the 20th century stimulated further research. However it must be recognized that many studies in the 1970s and 1980s focused on specific active components such as caffeine, often on animal populations and using extremely high doses. That would not be replicated in normal human consumption. As was to be expected, many of these studies purported to show adverse effects and these were widely reported in the media.

This is increasingly changing. Firstly studies are now being conducted on people, with typically moderate consumption levels. Secondly the size of the sample population has increased to improve representation.

Of course there is already an argument which goes along the lines: people have been drinking coffee for three hundred years so any bad effects would have by now made themselves evident. But over and above this more recent scientific research using improved methodologies and techniques is increasingly showing that for realistic levels of coffee consumption there seem to be a number of identifiable positive effects on health associated with drinking coffee. It is with pleasure that I will describe some of these. Firstly Caffeine, as the most well-known active component in coffee appears, as a stimulant of the central nervous system, to enhance both mental and physical performance.

Mental performance

The stimulating nature of coffee is obvious to almost all drinkers. More particularly coffee has been shown to improve alertness, attention and wakefulness, which is why it is a firm favourite with students worldwide. It improves processing of information and counteracts periods when the body's circadian rhythm or 'body clock' is at a low ebb, such as in the middle of the night or after lunch. For this reason coffee consumption is valuable in the workplace. The coffee break makes good business sense by optimising employee performance! It can also be helpful to fight "jet lag". Research by Dr. Martin Jarvis of the Institute of Psychiatry in London shows particularly clearly the relationship between improved mental performance and coffee consumption. And paradoxically, although a stimulant, coffee can also help people to relax by improving mood and as a natural bodily reaction to stimulation. Of course it has to be respected that a very small percentage of the population may be sensitive to the mild stimulant effects of coffee, but they can enjoy decaffeinated coffee as an option.

Physical performance

As with mental performance there is now substantial research showing that coffee improves physical performance. Performance by athletes can be enhanced, particularly for events of longer duration. A literature review of 39 published studies in 2004

indicated that caffeine improved exercise performance by over 12 %. Caffeine has been removed from the list of prohibited substances established by the World Anti-Doping Agency used as a reference by the International Olympic Committee.

Antioxidant content

Antioxidants are substances that by combating free radical molecules are likely to protect against major illnesses such as cancer and heart disease. A study conducted by Svilaas in Norway in 2004 shows that coffee has a significant role in antioxidant intake contributing 64 % of total antioxidant intake compared with 11 % for fruit and 8 % for tea. Other studies have also shown that coffee is a significant source of antioxidants in the diet with coffee actually containing four times the amount of antioxidants as tea!

Heart disease

The debate about any effect of coffee drinking on the development of coronary heart disease, heart attacks or ventricular arrhythmias has yielded an exceptional number of research papers over the last few decades. A consensus of published literature provides little evidence for a strong association between coffee drinking and coronary heart disease and none at all that coffee or caffeine are causal factors. Some misconceptions can be attributed to research papers that did not adequately take account of ‘confounding factors’ such as poor diet, cigarette smoking and sedentary lifestyle. Nevertheless it should be noted that certain methods of brewing coffee, in particular involving boiling, can raise cholesterol, so other brewing alternatives are recommended, and in fact are preferred by most drinkers.

Cancer

Huge amounts of research have been conducted in this area and the balance of evidence shows no heightened risk of cancer among coffee consumers. On the contrary coffee has been suggested as being protective in some areas, such as bowel cancer, where risk is

24% lower among adults who drink four or more cups a day compared with those who never drink coffee. Here the effect does not appear to arise from caffeine but from other compounds in coffee. The World Cancer Research Fund published a comprehensive review of diet and cancer in the late 90's and in relation to coffee they stated that 'Most evidence suggests that regular consumption of coffee and/or tea has no significant relationship with the risk of cancer at any site'.

Liver and kidney function

A very recent study of 90,000 people in Japan found that regular coffee drinkers had half the liver cancer risk of non-coffee drinkers. In addition studies published in 1992, 1999 and 2001 indicated that coffee had a protective effect against cirrhosis, kidney stone formation and gallstone formation.

Parkinson's and Alzheimer's disease

In recent years several studies have been conducted looking into coffee/caffeine intake and the incidence of degenerative brain disorders such as Parkinson's and Alzheimer's diseases. Results to date are encouraging showing that coffee/caffeine may be protective against the onset of these debilitating conditions.

Diabetes

Studies in the US, the Netherlands and Finland have indicated a reduced risk of developing Diabetes II amongst coffee drinkers.

Habituation

We often here people say they are ‘addicted’ to something and this has resulted in misuse of the word! Having a couple of cups of coffee at a certain time of day every day is most certainly a habit, but to describe this as being addicted is wholly inappropriate.

Although caffeine is frequently presented as addictive studies have shown that caffeine acts on different pathways in the brain related to addiction and reward compared with narcotic drugs. There is some evidence, albeit requiring further research, that regular coffee drinkers are less likely to become addicted to hard drugs.

Conclusion

It is no exaggeration to say that the picture with respect to the health effects of coffee consumption has been transformed in the last 15 years. Coffee is one of the most heavily researched commodities in the world today and research is increasingly showing that not only is coffee drinking perfectly safe but it may even confer some health benefits. With this in mind the ICO has embarked on a programme, in partnership with the European coffee industry, to disseminate information on these findings. The Positively Coffee Programme was set up in 2003 (www.positivelycoffee.com) and concentrates on serious independent research published in prominent peer-reviewed journals. In addition we have embarked on a new project to disseminate this information in a targeted manner to the Health Care professions to counteract the fall-out of the old negative studies. I invite all of you here to take up and share this good news wherever appropriate.

Selected references

Jarvis M. (1993) Does caffeine intake enhance absolute levels of cognitive performance? *Psychopharmacology* 110: 45-52

Doherty M. and Smith P.M. (2004) Effects of caffeine ingestion on exercise performance: a meta-analysis. *Int J Sports Nutr Ex Metab.*

Svilaas A. et al. (2004) Intakes of Antioxidants in Coffee, Wine and Vegetables are Correlated with Plasma Carotenoids in Humans. *Journal of Nutrition, Volume 134, pp 562 -567*

Hertog, M.G.L. et al. (1993) Dietary antioxidant flavonoids and risk of coronary heart disease *Lancet*, 342, 1007-11

Corrao, G; Zambon, A; Bagnardi, V; D'Amicis, A & Klatsky, A. Collaborative SIDECIR Group. (2001) Coffee, caffeine, and the risk of liver cirrhosis. *Ann Epidemiol*(7):458-65

Inouye M. et al. (2005) *Journal of the National Cancer Institute*, February 16, 2005

Ascherio A. et al. (2001) Prospective study of coffee consumption and risk of Parkinson's disease in men and women. *Ann Neurol* 50: 56-63.

Salazar Martinez E. et al (2004) Coffee consumption and risk of Type 2 diabetes in men and women. *Ann Intern Med* 140: 12-8.