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# EDITORIAL

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## The Urology Guide to Coffee and Tea

Coffee is well known in urology circles to be a common cause of urinary frequency, urgency, nocturia and sometimes urge incontinence in heavy coffee drinkers. The main cause is thought to be due to caffeine resulting in diuresis but caffeine is also known to decrease the sensation threshold during bladder filling. Increases in voided volumes and flow rates are often seen with high levels of ingested caffeine. In patients with troubling symptoms of overactive bladder (OAB), patients are often advised to avoid or limit consumption of coffee and tea but should also avoid beverages such as sodas, sports and energy drinks that are likely to include caffeine.

A recent highly publicized study of Italian men brought to the general public another urologic aspect of coffee, namely the long standing concept that coffee can reduce the risk of prostate cancer.<sup>1</sup> In this group of over 7,000 Italian men the risk of prostate cancer was reduced by 53% and this was attributed to heavy coffee drinking (three or more cups/day of Italian style coffee). This protective effect has also been reported in several studies over the last decade suggesting that coffee consumption is inversely associated with the incidence of prostate cancer and potentially prostate cancer related death. In men treated for prostate cancer, another large study indicated that high coffee consumption (greater than 4 to 5 cups/day), was associated with a 59% reduced risk of prostate cancer recurrence and/or progression compared with those men who drank 1 or less cups per week. Only a minority of studies have failed to show an association between drinking coffee and reduced risk of prostate cancer. Prostate cancer risk reduction is not the only potential health benefit of coffee consumption. Reduced risk of melanoma, pancreatic cancer in men, endometrial cancer, oropharyngeal cancer, death from liver cirrhosis, gallstones, strokes in women, tinnitus, Parkinson disease and lower incidence of diabetes have also been reported. Most literature supports that caffeine intake is independently associated with a lower risk of kidney stones.

Are there plausible explanations for this anti-tumor effect of coffee? Is this observation due to the caffeine or due to other bioactive compounds present in coffee? These same Italian researchers studied the impact of caffeinated coffee extracts on PC-3 and DU145 prostate cancer cells in culture and found that the extracts decreased both the growth and metastatic potential of the cells. These effects were almost non-existent when decaffeinated coffee extracts were tested. While the focus is often on the caffeine component, coffee is rich in antioxidants, polyphenols, and other bioactive components, that may also act to prevent or slow the development of different cancers.

It is curious that the method of coffee preparation and the type of coffee may alter this impact on prostate cancer. In the Italian study it was noted that in Italy the culture of coffee preparation includes "...high pressure, very high water temperature, and with no filters." In a Norwegian study of over 224,000 men looking at boiled versus non boiled coffee, an inverse relationship between number of cups per day and the risk of prostate cancer was found with only for the boiled coffee type being protective.

Bladder cancer risk and coffee consumption has been very controversial due to overlapping risk factors. A recent meta-analysis of over 40 published studies suggests a slightly increased risk of bladder cancer with coffee consumption. Kidney cancer has not been associated with any risk modification based on coffee consumption.

Can coffee improve libido and overall sexual health? There are limited data on erectile dysfunction (ED) and coffee but one National Health and Nutrition Examination Survey (NHANES) study cites up to a 42% reduction in ED by consuming 2-3 cups a day. There is no significant peer reviewed body of literature on libido and caffeinated beverages. Limited data on the "trendy" supplement guarana, derived from a tropical rainforest vine and rich in caffeine, has been promoted on the internet and by famous TV doctors for many health benefits including libido enhancement. *Caverflo Natural Herbal Coffee* has been marketed for use as a male libido enhancement product and highlighted the libido benefits of the caffeine rich guarana and its other "natural aphrodisiac" herbal ingredients. The supplement was sold via the internet and products purchased between August 2016 and February 2017 were

analyzed by the FDA. In May 2017 the FDA indicated that sildenafil and tadalafil were both detected in the *Caverflo Natural Herbal Coffee*. A voluntary recall has been initiated. With these PDE-5 inhibitors in the mix it is highly likely that this “spiked coffee” did improved sex function.

While on the topic of coffee we cannot ignore tea consumption. Next to water, tea is the most widely consumed beverage in the world, with the US quite low on the national listing of per capita consumption. Most of the focus has involved green tea consumption over the more common forms such as black tea. A 2017 meta-analysis indicated that there was no significant association between tea consumption and risk of bladder cancer. Green tea extract and/or green tea polyphenols have been shown to be effective in preventing tumorigenesis at different organ sites in animal models. Green tea extracts have also been investigated as chemoprevention agents. One study suggested that heavy green tea consumption (greater than 5 cups/day) slowed prostate cancer progression in a group of Asian men. The use of green tea in prostate cancer prevention should be considered inconclusive until more research is done.

While coffee consumption can aggravate overactive bladder and urinary incontinence, can there be other downsides to drinking large amounts of coffee? Transient increases in blood pressure and heart rate can occur with caffeine and ingestion and anxiety and depression are more common in high coffee consumers. High coffee intake can also cause insomnia. Does staying awake have anything to do with prostate cancer?

Several recent epidemiologic studies have implicated sleep reduction (3-5 hours/night) increasing both the risk of developing and dying from prostate cancer. Drink too much coffee to decrease the risk of prostate cancer and you sleep less increasing your risk of prostate cancer. Another enigma to ponder in the frequently controversial world of prostate cancer.

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## References

1. Pounis G, Tabolacci C, Costanzo S, et al. Reduction by coffee consumption of prostate cancer risk: Evidence from the Moli-sani cohort and cellular models. *Int J Cancer* 2017;141(1):72-82.