

**EFFECT OF TEA ON THE ABSORPTION AND
EXCRETION OF CAFFEINE****E. H. Karunanayake, P. Jayawardena***(Dept. of Biochemistry, Faculty of Medicine,
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Recent studies¹ indicate a possible teratogenic effect of caffeine in test animals. Caffeine is a major constituent of tea, which also contains a high concentration of polyphenols, to which caffeine binds very strongly. Studies were therefore undertaken to evaluate the effect of polyphenols on the bioavailability of caffeine.

Following oral administration (100 mg/kg body wt) of (1-methyl-¹⁴C) caffeine to male Sprague-Dawley rats (n = 6) approximately 69% of the administered radioactivity appeared in urine and feces during 48 h, while in the female (n = 6) the recovery of administered radioactivity was approx. 79%. In contrast, when (1-methyl-¹⁴C) caffeine was administered with tea the total urinary and fecal recovery in males (n = 6) was approx. 73% and in females (n = 6) was 85%. Our results also indicate that there is a small, yet a significant sex difference in the excretion of caffeine whether administered singly or with tea.

The time-course of radioactivity associated with blood and stomach also showed differences with the type of caffeine preparation. Following the administration of (1-methyl-¹⁴C) caffeine, the level of radioactivity associated with the stomach declined rapidly during the first 6 hours. In contrast, this decline was faster when caffeine was administered with tea. The peak radioactivity in blood was observed 2 hours after administration of both preparations of caffeine. However, this peak radioactivity in blood declined rapidly following the administration of pure ¹⁴C-caffeine, whereas the blood level of radioactivity following the administration of ¹⁴C-caffeine with tea remained steady for approx. 24 hours. These data indicate, (a) an enhancement of caffeine absorption from the gastrointestinal tract by tea, and (b) though the absorption into general circulation is enhanced, the uptake into tissues seems to be retarded by the presence of tea or its constituents.

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References

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2. *Federal Register*, (1980), 45, (205), 69817.