

## Assessment of the Clinical Studies

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Five clinical studies evaluated the effect of products with varying levels of EGCG and caffeine on energy expenditure (EE), which is the scientific term for burning calories. The researchers placed study subjects in metabolic chambers and monitored their calorie intake and calorie expenditure.

Three of the five studies, by Tappy, Dulloo, and Rumpler, involved products with levels of EGCG and caffeine comparable to that in three servings of Enviga. The Tappy, Dulloo, and Rumpler studies each reported a statistically significant increase in calorie burning in the subjects over a 24 hour period of time. The Tappy and Dulloo studies used green tea as the source for the EGCG while the Rumpler study used oolong tea.

The other two clinical studies, by Komatsu and Ota, evaluated products with lower levels of EGCG and caffeine than the products studied by Tappy, Dulloo and Rumpler. Neither the green tea beverage tested by Komatsu nor the catechin-containing beverage by Ota increased calorie burning.

The levels of EGCG and caffeine in the products tested in these five clinical studies and the percent increase in calorie burning are found in the table below. A brief summary of each clinical study follows the table.

Study	EGCG/Day	Caffeine/Day	% Increase in Calorie Burning
Tappy (unpublished)	282 mg from green tea	300 mg	106 kcal/day (4.6%)
Dulloo (1999)	270 mg from green tea	150 mg	78 kcal/day (4.0%)
Rumpler (2001)	244 mg from oolong tea	270 mg	67 kcal/day (2.9%)
Komatsu (2003)	156 mg from green tea	77 mg	No increase
Ota (2005)	218 mg in a catechin-containing beverage	42 mg	No increase

Tappy, L., Bernard, S., Faeh, D., Van Bladeren, P., Acheson, K., Jorin, C.H., and Cristiani, I. 2004. **Effect of beverage containing green tea catechins, calcium and caffeine on 24-h energy expenditure and fat oxidation in humans.** Nestle Clinical Study-Trial No. 04.02NRC. 27 April 2004. \*Not-published.\*

Dulloo, A.G., Duret, C., Rohrer, D., Girardier, L., Mensi, N., Fathi, M., Chantre, P., and Vendermander, J. 1999. **Efficacy of green tea extract rich in catechin polyphenols and caffeine in increasing 24-h energy expenditure and fat oxidation in humans.** *Am J Clin Nutr.* 70(6): 1040-1045.

Rumpler, W., Seale, J., Clevidence, B., Judd, J., Wiley, E., Yamamoto, S., Komatsu, T., Sawaki, T., Ishikura, Y., and Hosoda, K. 2001. **Oolong Tea Increases Metabolic Rate and Fat Oxidation in Men.** *J Nutr.* 13(11): 2848-2852.

Komatsu, T., Nakamori, M., Komatsu, K., Hosoda, K., Okamura, M., Toyama, K., Ishikura, Y., Sakai, T., Kunii, D. and Yamamoto, S. 2003. **Oolong tea increases energy metabolism in Japanese Females.** *J. Med. Invest.* 50: 170-175.

Ota, N., Soga, S., Shimotoyodome, A., Haramizu, S., Inaba, M., Murase, T., and Tokimitsu, I. 2005. **Effects of Combination of Regular Exercise and Tea Catechins Intake on Energy Expenditure in Humans.** *J Health Sci.* 51(2): 233-236.