Oriental Pharm. Experimental Med., 3, 100-105 (2003).

Multidrug resistance reversal in mouse lymphoma cells by Indian tea leaves, Indian coffee seeds and chicory.

Rao BK, [1] Motohashi N, [2] Kawase M（河瀬雅美）,[3] Spengler G, [4] Molnar J [4]

[1]Department of Chemistry, Nagarjuna University, Andhra Pradesh, India; [2]Meiji Pharmaceutical University, Tokyo, Japan; [3]Faculty of Pharmaceutical Sciences, Josai University, Saitama, Japan; [4]Faculty of Medicine, Albert Szent-Gyorgyi Medical University, Szeged, Hungary

Systematic analysis of caffeine from the commercial samples of India tea leaves was performed by a routine method and the content of caffeine was found to be 19.0-37.4 mg/100 g leaves. The caffeine contents from coffee seeds and chicory from Indian origin were analyzed and found to be 0.6540-1.4920 g/100 g seeds. Caffeine contents of roasted Indian chicory roots were lower than either those of Indian tea leaves or Indian coffee seeds. The multidrug resistance (MDR) reversing effects were tested on a mouse leukemia cell line of L-5178 cells by methanol extracts [M1-M15] of Indian tea leaves and coffee seeds, comparing to a control of verapamil. The effects were measured by fluorescence ratio between treated and untreated group cells. Among fifteen methanol extracts, a Gemini tea [M6](fluorescence activity ratio 5.26) had the most potent effect for L-5178 cells. The extract M6 was 0.63-fold of verapamil. We suggest that one of mechanisms of reversal by M6 might have strong affinity to dopamine D_1 and D_2 receptors. Further studies with many more tumor and normal cell lines are necessary to confirm the MDR reversal specificity of coffee methanol extracts.