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Review of epidemiological reports on health effect of green tea in the liver.

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Green tea (*Camellia sinensis* L.) consumption has a long history and its preparations have been widely available as supplement in the market. Recently, physiological properties of green tea have been paid to a particular attention since some cases of hepatitis after its consumption are reported¹. Nevertheless, the growing interests in safety concern of green tea on plausible adverse effect on human health has been alleged based on the results of animal experiments administered green tea and/or extracts under unrealistic conditions. However, National Institute of Health Science of Japan conducted long-term study for a chronic toxicity and carcinogenesis of tea extract. They concluded that catechin mixture (tea extract) has no carcinogenic potential in male and female rats². Numbers of literature of epidemiological/clinical study addressing the positive health effect of green tea are still increasing. On the other hand, National Toxicological Program conducted long-term study for a chronic toxicity and carcinogenesis of green tea extract³.

Thus, ILSI-Japan Tea Task Force currently engaged to review available literature on suspected hepatotoxicity and liver carcinogenesis from green tea to determine an effect of green tea on human health. Wherein, it has been suspected that green tea hepato toxicity is probably associated with EGCG that under particular conditions can induce oxidative stress in the liver. Also, in some cases toxicity is related to concomitant medications. Electronic databases including Medline, Embase, Biosis, were searched using keywords related to tea, epidemiology, and liver and 436 papers and further specified 34 papers based on titles and abstracts were identified (Figure 1). We found no report concluding increased risk, in contrast, most of the reports indicated the reduced risk. Based on this survey, we considered that most of epidemiological and/or clinical reports supported reduced risk of hepatotoxicity and/or liver carcinogenesis in humans with green tea consumption.

- 1) <http://apps.who.int/medicinedocs/en/d/Js4946e/1.4.html#Js4946e.1.4>
http://www.hc-sc.gc.ca/dhp-mps/medeff/bulletin/carn-bcei_v17n1-eng.php#a3
- 2) Takami S., *et. al.*, Evaluation of toxicity of green tea catechins with 90-day dietary administration to F344 rats., *Food Chem. Toxicol.*, (2008) 46, 2224-2229
Yoshida M., *et. al.*, Lack of chronic toxicity and carcinogenicity of dietary administrated catechin mixture in Wistar Hannover GALAS rats. *J. Toxicol. Sci.*, (2011) 36, 297-311
- 3) Chan Po C., *et. al.*, Fourteen-Week Toxicity Study of Green Tea Extract in Rats and Mice., *Toxicol. Pathol.* 2010, 38: 1070
<http://ntp.niehs.nih.gov/?objectid=76498EC3-EDBD-3E87-BFD9C2662A40C368>

Direction:

Because there are too many epidemiologic study reports about 「Green tea, catechin」 to review, we selected the reports focusing on the effect to the 「liver」.

First screening search on **Dialog**(Medline, Embase, Biosis, Toxline)
by using key words [green tea, catechin, epidemiology, clinical study]

Hit 436 literatures

Select epidemiologic study reports by a decision with their title.

Refine to 28 reports written in English

Target reports written in Japanese were searched on CiNii

Further 8 reports were added to review list

Total 36 reports were reviewed by ILSI Tea task force member

No report concluding a risk increase was found, in contrast, most of the reports indicated that green tea consumption reduces the hepatic risk.

Figure 1. Approach for review of human study reports and their results