論　文
Regular article

日本食品化学学会誌、Vol. 23(1), 27-36(2016)
Japanese Journal of Food Chemistry and Safety (JJFCS)

田七人参の茎と葉のラットにおける90日間反復投与経口毒性試験

(2015年12月7日受付)
(2016年2月1日受理)

矢内和博[a)]、佐藤和正[b)]、山崎直樹[b)]、増田修一[c)]、木苗直秀[c)]

a) 松本大学
b) 株式会社万城食品
c) 静岡県立大学

Tienchi ginseng extract: 90-day subchronic toxicity study of stems and leaves of tienchi ginseng in rats

(Received December 7, 2015)
(Accepted February 1, 2016)

Kazuhiro Yanai[a)], Kazumasa Sato[b)], Naoki Yamazaki[b)], Shuichi Masuda[c)], Naohide Kinae[c)]

a) Matsumoto University
b) R & D, Banjo Foods Co., Ltd.
c) Department of Food and Nutritional Science, Graduate School of Nutritional and Environmental Sciences, University of Shizuoka

Abstract

Tienchi ginseng tea (TGT) extract was prepared from the above-ground organs, stems and leaves of Tienchi ginseng. The active ingredient of that is ginsenosides of the saponin. The rhizome is used as crude drug, but the above ground part is treated as food. In order to study the subchronic toxicity of TGT extract, Crl:CD(SD) rats of both genders were administrated TGT extract dissolved by water for injection orally at concentrations of 0 (control group), 100, 300 and 1,000 mg/kg (b.w.) once a day consecutively for 91 days, and observation of general condition, recording of body weight and food consumption were carried out once a week, examination of hematology, blood coagulation and biochemistry, serum protein electrophoresis, measurement of organ weight, and pathology were performed after administration of TGT extract for 91 days after the inspection of urinalysis and ophthalmology at 13 weeks. There is no death case and the change of general conditions according to TGT extract through dosages for 91 days in male and female rats. In addition, the toxic change with TGT extract was not accepted in the inspection item mentioned above. From the above-mentioned result, the subchronic toxicity by TGT extract was considered to be no observable adverse effect level in rat.

Keywords：ラット、田七茶、ジンセノシド、90日反復投与毒性試験、血液学
rat, Tiench ginseng tea (TGT), ginsenoside, 90-day toxicity study, hematology

I　諸言

中国雲南省特産の田七人参（*Panax notoginseng* (Burk.) F. H. Chen）は、高貴薬して扱われ、その有効性[1-5)]が多く報告されている。田七人参の有効成分であるサポニンは2つのグループに分類され、一つは(20*S*)-protopanaxadiol (PPD)群で、ジンセノシド Rb_1、Rc、Rb_2、Rb_3 および Rd を含み、もう一方は、(20*S*)-protopanaxatriol (PPT) 群でジンセノシド Rg_1、Re を含む。また、PPT 群のサポニンは PPD 群と相反する作用を示し、PPD 群は血圧降下作用を示すとされている。さらに、田七人参の根茎部には PPD 群および PPD 群のサポニン両方含まれるのに対し、田七茶（TGT）抽出液には PPD 群のサポニンのみが含まれることが分かった。さらに、4%TGT 抽出液を飲水させた SHRSP ラットに血圧上昇抑制効果が見られた[6)]。また、さらに安全性の評価については Ames 試験による in vitro 遺伝毒性試験およびラットを用いた急性毒性試験が実施されている。その結果、変異原性は認められなかった。また致死量は体重 1 kg あたり 2,000 mg 以

連絡先：〒390-1295　長野県松本市新村2095-1　松本大学　矢内和博
Corresponding author: Kazuhiro Yanai, Matsumoto University, 2095-1, Nimura, Matsumoto-shi, Nagano 390-1295, Japan