

Effect of Extracts from *Ixeris dentata* on Radiation-induced Oxidative Stress

17

150

(*Ixeris dentata*)

3

ascorbic acid

6

ascorbic acids

DPPH assay

5

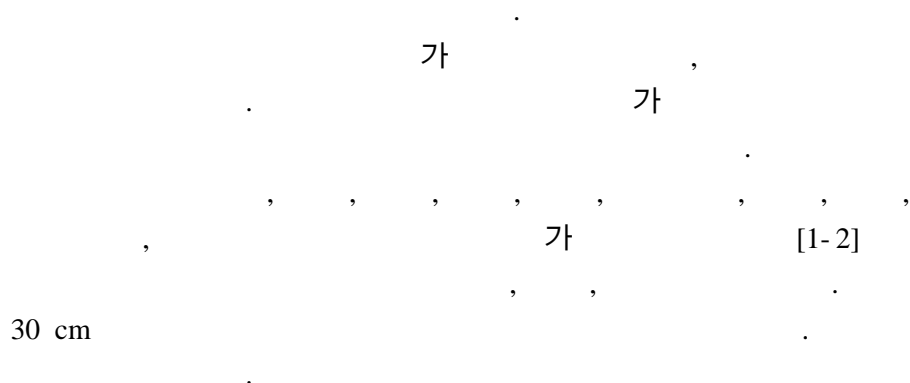
DPPH assay

caffeine

Abstract

Extracts from different parts (root or leaf) of *Ixeris dentata* and with different extraction method (using water or ethanol) were examined for their potential depense against oxidative stress. It is famous as a remedial material for alleviation of fever, hematopoiesis, pneumonia and inflammation of the liver in folk medicine. The present study was designed to explore *in vivo* the antioxidant effects of water- and ethanol-extracts of *I. dentata*. The extracts of the plant were tested for their free radical scavenging activity with the DPPH assay. For the *in vivo* studies, male F344 rats (3 week-old) received *po* administration of both extracts 0.5 mg/ml during 5 days before whole-body irradiation. Six hours after irradiation, we measured the body and organ weight and collected blood. The levels of serum aspartate aminotransferase (AST), alanine aminotransferase (ALT) and lactate dehydrogenase (LDH), alkaline phosphatase (ALP) showed a similar pattern six hours after irradiation. In case of water extracts-dietary group after irradiation, the levels of all enzymes has a tendency to decrease toward to base levels. Therefore, the results reflects the antioxidant activity of *I. dentata* extracts and its potential to protect against radiation damage.

1.



[3].

2.

()
100g 10 95
2 12,000 rpm 10
2
(24) 48 (M.W. 12,400) 2 [4].
DPPH(1,1-diphenyl-2-picryl hydrazyl) [5]. 0.1
mM DPPH
30 517 nm

10/14 (/)
1
0.5 mg/ml
[6]. 5 6.5 Gy
Kim et al.
[7]. ⁶⁰Co 1.5 × 10¹⁴ Bq,
1282.6768 rad/hour , 6.5 Gy 6
(ANOVA) Student's t test
.p 0.05

3.

DPPH test figure 1 0.0195 mg/ml

94% , 20 mg/ml 56%
 0.05 mg/ml DPPH
 66% , 91% 가
 0.05 mg/ml 16% , 가 10.4%
 caffeine

(figure 1).

DPPH

0.5 mg/ml

. 6

(Table 1).

(Table 2).

(Table 3).

가

가

Table 1. organ indices of the experimental group

	CT	R	A	AR	B	BR	C	CR	D	DR	E	ER
Li/body	4.34	4.21	4.51	4.49	4.21	4.05	4.25	4.27	4.55	4.07	4.33	4.2
Kid/body	0.47	0.40	0.44	0.45	0.47	0.46	0.44	0.45	0.44	0.49	0.46	0.34
T/body	0.47	0.40	0.44	0.45	0.47	0.46	0.44	0.45	0.44	0.49	0.46	0.34
Spl/body	0.33	0.23	0.36	0.21	0.37	0.23	0.33	0.20	0.30	0.21	0.34	0.20

Abbreviations; CT, control; R, irradiation; A, ascorbic acid; AR, ascorbic acid + irradiation; B, water-extracts of *I. dentata* leaf; BR, water-extracts of leaf + irradiation; C, ethanol-extracts of *I. dentata* leaf; CR, ethanol-extracts of leaf + irradiation; D, water-extracts of *I. dentata* root; DR, water-extracts of leaf + irradiation; E, ethanol-extracts of *I. dentata* root; BR,

ethanol-extracts of root + irradiation.

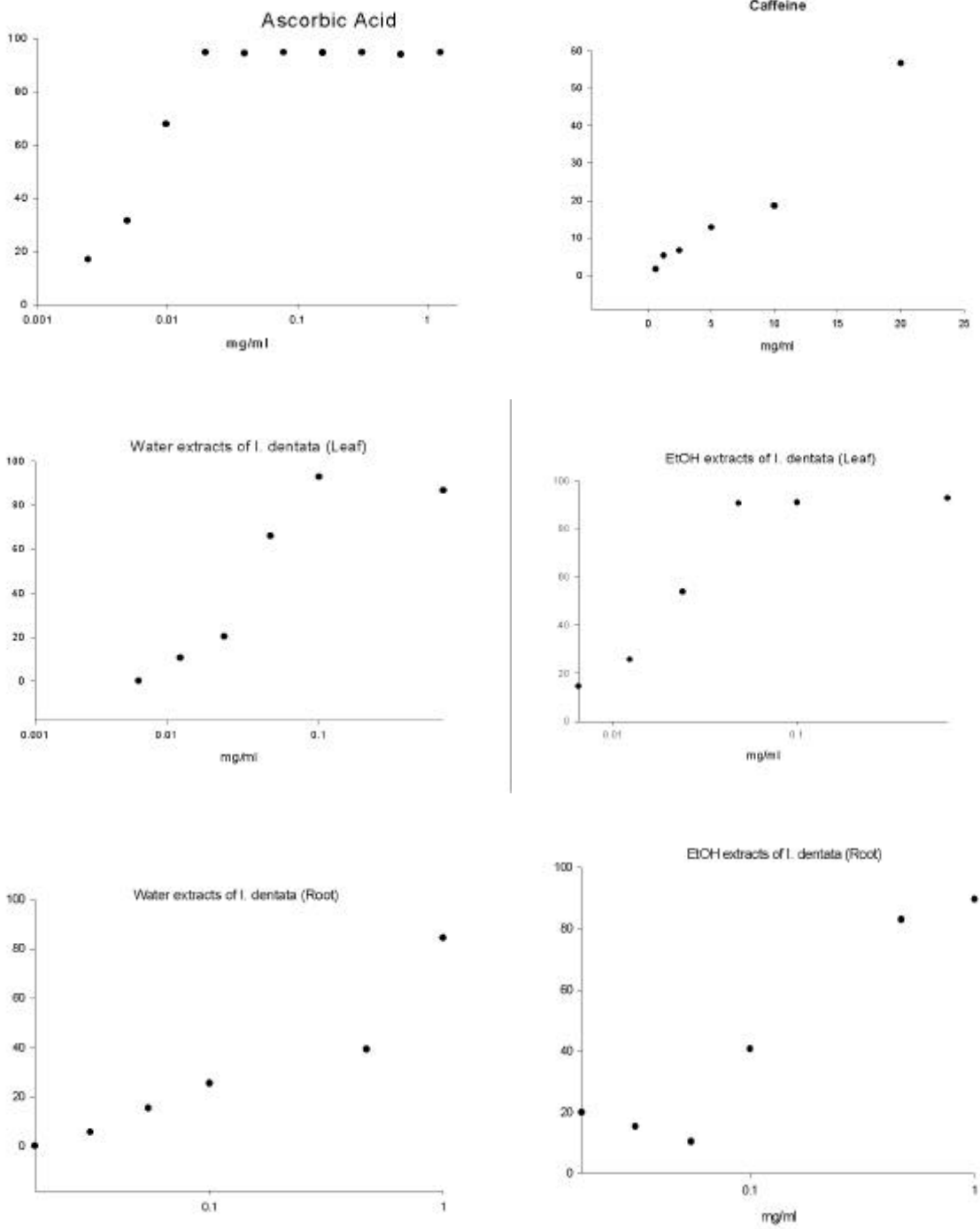


Figure 1. Scavenging effects of ascorbic acid, caffeine, water-extracts, and ethanol-extracts of leaf and root of *I. dentata* on DPPH radical. An ethanol solution of each sample (or ethanol

itself as control) was added to 0.1 mM DPPH in methanol solution.

Table 2. Measurement of ALP, LDH, SGOT (equal to AST, aspartate aminotransferase) and SGPT (equal to ALT, alanine aminotrasferase) in blood of experimental rat

	CT	R	A	AR	B	BR	C	CR	D	DR	E	ER
ALP	100	108.3	108.4	104.1	108.2	92.3	127.6	106.3	128.4	122.6	115.1	98.4
LDH	100	87.55	49.99	57.3	47.8	117.9	52.3	46.6	48.3	65.4	61.1	64.1
SGOT	100	88.85	103.5	157.1	92.0	274.8	85.1	76.1	105.1	147.4	130.2	169.1
SGPT	100	100	110.7	121.5	98.4	236.9	75.3	75.3	118.4	123.1	115.3	124.6

Table 3. The counting of red blood cell (RBC) and white blood cell (WBC) and the level of hemoglobin in EDTA-blood by ADVIA 120 (Bayer).

	CT	R	A	AR	B	BR	C	CR	D	DR	E	ER
WBC	100	35.03	118.2	19.70	118.9	63.50	86.13	41.60	87.59	32.84	124.1	33.57
RBC	100	113.2	94.95	122.1	111.3	103.6	112.1	113.2	118.8	118.3	109.9	111.3
HCT	100	121.8	96.87	128.1	115.6	106.2	118.7	118.75	121.8	118.7	115.6	112.5
Hb	100	108.6	106.7	120.2	114.4	105.7	112.5	112.5	118.3	117.3	108.6	108.6

4.

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