

Immunomodulatory Activity of 3b,6b-Dihydroxyolean-12-en-27-oic Acid in Tumor-Bearing Mice

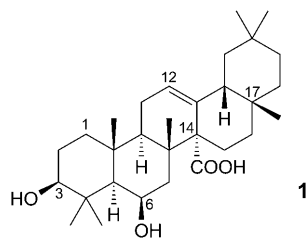
Wen Deng), Hong-Xiang Sun*), Feng-Yang Chen), Min-Li Yao))
, C A 310029, . . C
(: 86-571-869-71091; : 86-571-869-71091; - : @ . .)
) 310013, . . C
) C 310053, . . C

3 β ,6 β -
Astilbe chinensis. 12-27- (1) *in vivo* b 1 40, 60, 80 10 1 22 180 (C) 180 b (<) 1 2.4- 2 (-2) b (BC)- B)- C 180 22 b BC b 1

Introduction.

Introduction.

5. b
6. b
7. 12. b
Astilbe chinensis (AXIM.) RANCH. AVAT. ()
(A) *A. chinensis*
(C)-12-27- (1)
A. chinensis,
16 17. C 1
-8910
60 18.
C 205, C 205
Bcl-2 -3
 $\Delta\psi$,
19. 1



Results. 1. Inhibition of **1** on the Growth of Transplantable Tumors in Mice.

1 Tables 1
2. 180
1 ($P < 0.001$), 35.77,
51.11, 47.94% 40, 60, 80 % . C **1**
($P < 0.001$).
1 22 35.57, 48.84, 41.10%
(Tables 1 2)

2. Effects of **1** on Splenocyte Proliferation in S180-Bearing Mice.

1
C A (C A)- 180- Fig. 1.

b 1. Inhibitory Effect of **1** on the Growth of Transplantable S180 Sarcoma in Mice)

		%			b	%
		B	A			
C		18.96±1.58	31.19±1.87	3.03±0.54		
C	50	19.34±1.73	28.63±1.36	1.08±0.46***	64.43	
1	40	18.90±1.55	31.20±2.79	1.95±0.28***	35.77	
	60	19.24±1.92	31.30±2.78	1.48±0.49***	51.11	
	80	19.15±1.63	31.49±2.84	1.58±0.40***	47.97	

*) $***P < 0.001$. C : (n = 10).

b 2. Inhibitory Effect of **1** on the Growth of Transplantable H22 Hepatoma in Mice)

		%			b	%
		B	A			
C		18.34±1.11	29.59±3.74	3.25±0.76		
C	50	18.55±0.99	25.78±2.77	0.84±0.16***	74.23	
1	40	18.86±1.20	29.34±1.48	2.10±0.25***	35.57	
	60	18.85±0.78	29.06±2.19	1.66±0.46***	48.84	
	80	19.13±1.21	30.04±2.27	1.92±0.33***	41.10	

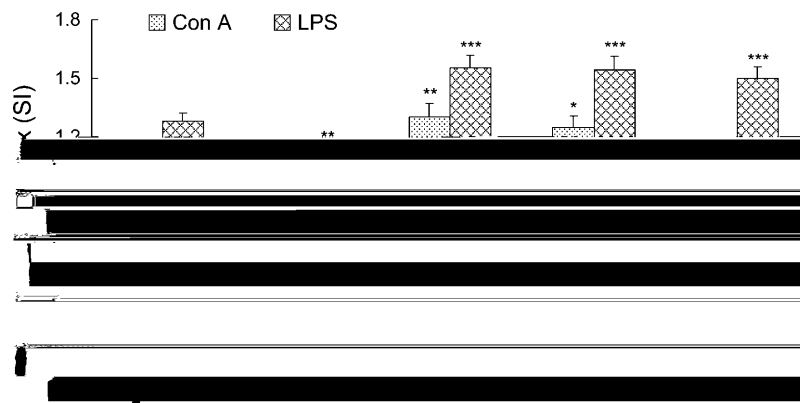
*) $***P < 0.001$. C : (n = 10).

Fig. 2. Inhibitory effect of **1** on the growth of transplantable S180 sarcoma in mice. A) Control group, B) group treated with **1** (40 mg/kg), C) group treated with **1** (60 mg/kg). $P < 0.05$, $P < 0.01$. $P < 0.001$. C : (n = 10).

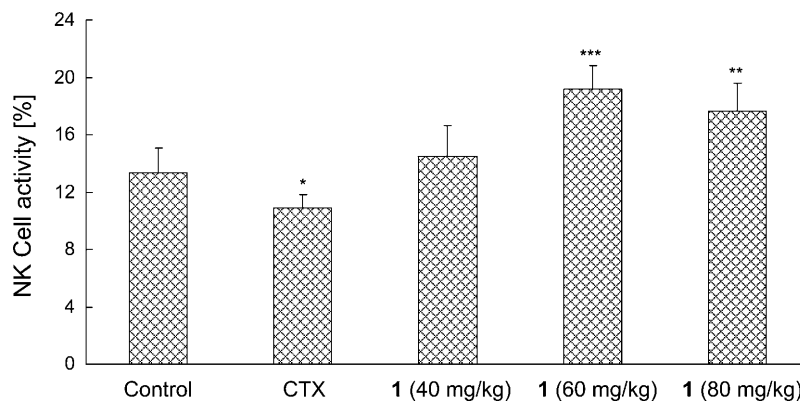
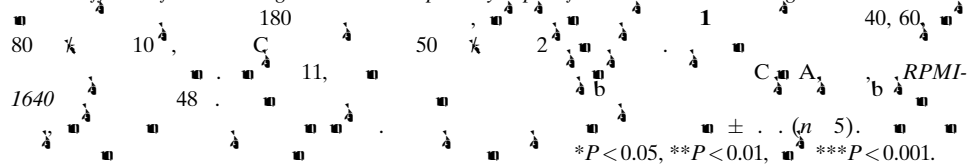
3. Effects of **1** on Natural Killer (NK) Cell and Cytotoxic T Lymphocyte (CTL) Activity in S180-Bearing Mice. Fig. 3. Effect of **1** on the activity of NK cells and CTLs in S180-bearing mice. A) Control group, B) group treated with **1** (40 mg/kg), C) group treated with **1** (60 mg/kg). $P < 0.05$, $P < 0.01$. $P < 0.001$. C : (n = 10).

4. Effects of **1** on Secretion of IL-2 from Splenocytes in S180-Bearing Mice. Fig. 4. Effect of **1** on the secretion of IL-2 from splenocytes in S180-bearing mice. A) Control group, B) group treated with **1** (40 mg/kg), C) group treated with **1** (60 mg/kg). $P < 0.05$, $P < 0.01$. $P < 0.001$. C : (n = 10).

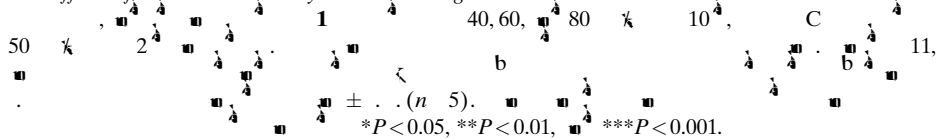
1) 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide.



1. Effects of **1** on mitogen-stimulated splenocyte proliferation in S180-bearing mice.

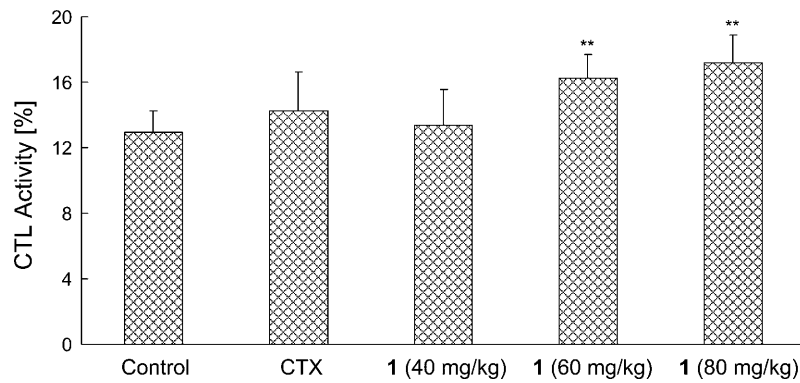


2. Effects of **1** on NK cell activity in S180-bearing mice.

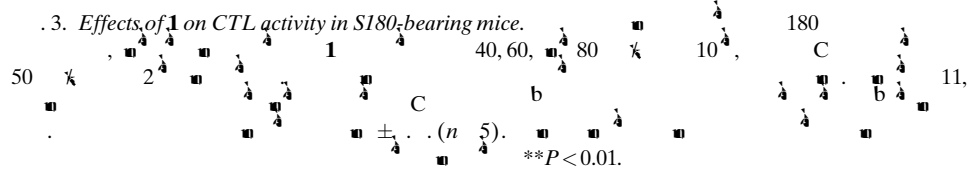


5. Effects of **1** on 2,4-Dinitrofluorobenzene (B)-Induced Delayed-Type Hypersensitivity () reactions in Mice.

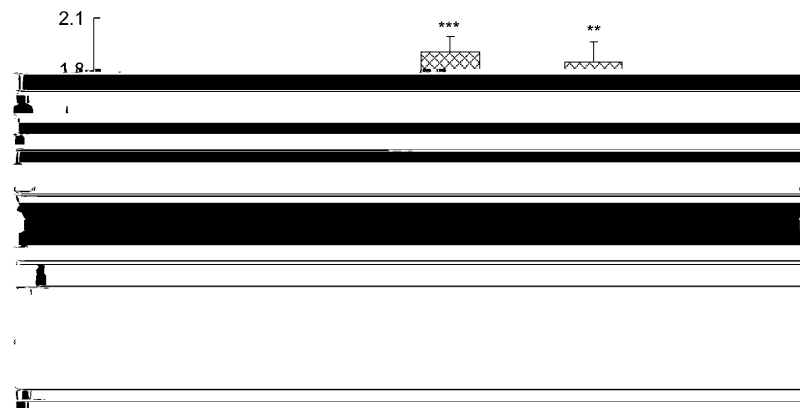




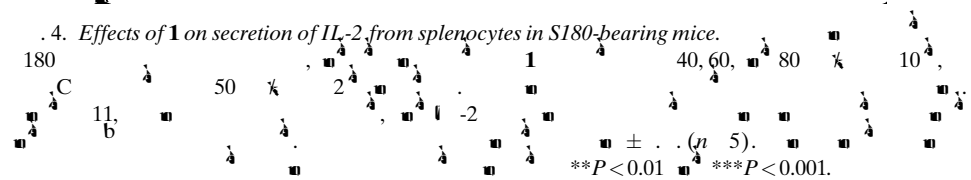
3. Effects of **1** on CTL activity in S180-bearing mice.



** $P < 0.01$.



4. Effects of **1** on secretion of IL-2 from splenocytes in S180-bearing mice.



** $P < 0.01$ *** $P < 0.001$.

($P < 0.05$, $P < 0.01$, $P < 0.001$), C ($P < 0.01$),

6. Effects of **1** on the Sheep Red Blood Cell (BC)-Induced Antibody Production

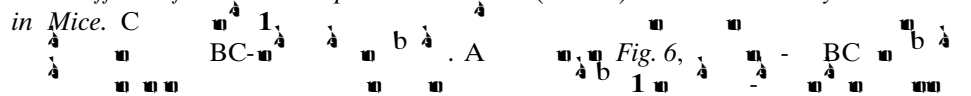


Fig. 6,

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b , u u a u b b 2 . u
u b , , u a a u a , u a u u u

Experimental Part

$$\begin{array}{c} \overline{U} \\ 2,4 \\ C \end{array}$$

10⁶ cells/ml, 40, 60, 80% (C₂A) and 10% (C₂A) were added to the wells. After 24 h, 50% of the cells were harvested and analyzed by flow cytometry. The percentage of CD4⁺ cells was calculated as follows: $\% \text{ CD4}^+ = (C_2A) / C \times 100$, where C₂A is the number of CD4⁺ cells and C is the total number of cells.

Splenocyte-Proliferation Assay. Splenocytes (3 × 10⁶) were isolated from mice and cultured in RPMI-1640 medium (100 μl) containing 10% fetal calf serum (FCS) and 100 U/ml penicillin. After 24 h, 50% of the cells were harvested and analyzed by flow cytometry. The percentage of CD4⁺ cells was calculated as follows: $\% \text{ CD4}^+ = (C_2A) / C \times 100$, where C₂A is the number of CD4⁺ cells and C is the total number of cells.

Assay of Natural Killer (NK)-Cell Activity. NK cells were isolated from spleen and cultured in RPMI-1640 medium (100 μl) containing 10% fetal calf serum (FCS) and 100 U/ml penicillin. After 24 h, 50% of the cells were harvested and analyzed by flow cytometry. The percentage of CD4⁺ cells was calculated as follows: $\% \text{ CD4}^+ = (C_2A) / C \times 100$, where C₂A is the number of CD4⁺ cells and C is the total number of cells.

Assays of Cytotoxic T-Lymphocyte (CTL) Activity. CTLs were isolated from spleen and cultured in RPMI-1640 medium (100 μl) containing 10% fetal calf serum (FCS) and 100 U/ml penicillin. After 24 h, 50% of the cells were harvested and analyzed by flow cytometry. The percentage of CD4⁺ cells was calculated as follows: $\% \text{ CD4}^+ = (C_2A) / C \times 100$, where C₂A is the number of CD4⁺ cells and C is the total number of cells.

Cytokine Levels in the Cultured Supernatants of Splenocytes. Splenocytes (3 × 10⁶) were isolated from mice and cultured in RPMI-1640 medium (100 μl) containing 10% fetal calf serum (FCS) and 100 U/ml penicillin. After 24 h, 50% of the cells were harvested and analyzed by flow cytometry. The percentage of CD4⁺ cells was calculated as follows: $\% \text{ CD4}^+ = (C_2A) / C \times 100$, where C₂A is the number of CD4⁺ cells and C is the total number of cells.

2,4-Dinitrofluorobenzene (DNFB)-Induced Delayed-Type Hypersensitivity (DTH) Response. Mice were sensitized with DNFB (100 μg) in 1% BSA solution. After 24 h, 50% of the cells were harvested and analyzed by flow cytometry. The percentage of CD4⁺ cells was calculated as follows: $\% \text{ CD4}^+ = (C_2A) / C \times 100$, where C₂A is the number of CD4⁺ cells and C is the total number of cells.

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