

Platycodin D Improves the Immunogenicity of Newcastle Disease Virus-Based Recombinant Avian Influenza Vaccine in Mice

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A , C A , Z 310029, C
(: 86-571-86971091; : 86-571-86971091; - : @ . .)
) B , Z 310029,
) C
) C 350108,

(A)
Platycodon grandiflorum,
(- 5) . C 1 A (C A)-, -
(), -
1, 2 , 2 ($P < 0.05$, $P < 0.01$, $P < 0.001$)
- 5. A 1/ 2 (- γ -10)
(- A A-3) - 5 ($P < 0.01$ $P < 0.001$). 1
() ($P < 0.05$),
1 , 1 - 5

Introduction. A

1 . , (A) (A)
5 7 (A) 50
2 3 . 2005,
, A , A , 4 .
A ,
5 1
(A) 6 7 . 2009, 424

5 1 60% (261
) 8 .
A , 9 .
- 10 .
11 , -
12 , A ,
(A 9 . -
A 12 , A -
13 16 , A-
() 17 () 18 21 .
A 22 . ,
A ,
A - ,
23 24 . A -
A ,
A ;
30 , 59 27 28 , (A) 29 , -21
5 1 . A 1
31 . A
59-
1 , 32 . -21 1 C 59
- ,
33 .
(1)
Platycodon grandiflorum. A 1
34 B
35 ,
1
(- 5)

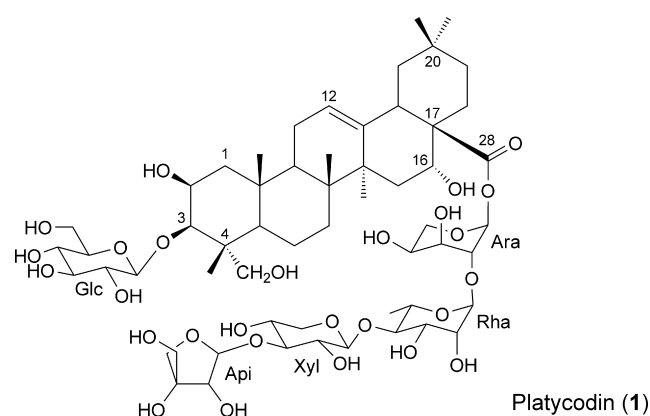


Fig. 1.

100 μ - 5 A (- 5 1 75
Quillaja saponaria) 25 μ - 5
- 5/A (P<0.01). A - 5
5A - - 5/1 - 5/
A - 5 -
5/A (P<0.05, P<0.01, P<0.001). , (P>
0.05) - 5 - 5/A .

1 A
B - 5.
Effects of 1 on Natural Killer (NK) Cell Activity in Mice Immunized with rL-H5.

Fig. 2. $\mathbf{1}$ ζ \mathbf{y} - 5
 $(P < 0.05)$ $(P < 0.01)$ $\mathbf{1}$ 50, 75, 100 μ \mathbf{y} A 25 μ ζ
 $(P > 0.05)$

5. *Effects of 1 on the Antigen-Specific Serum Antibody Response.*

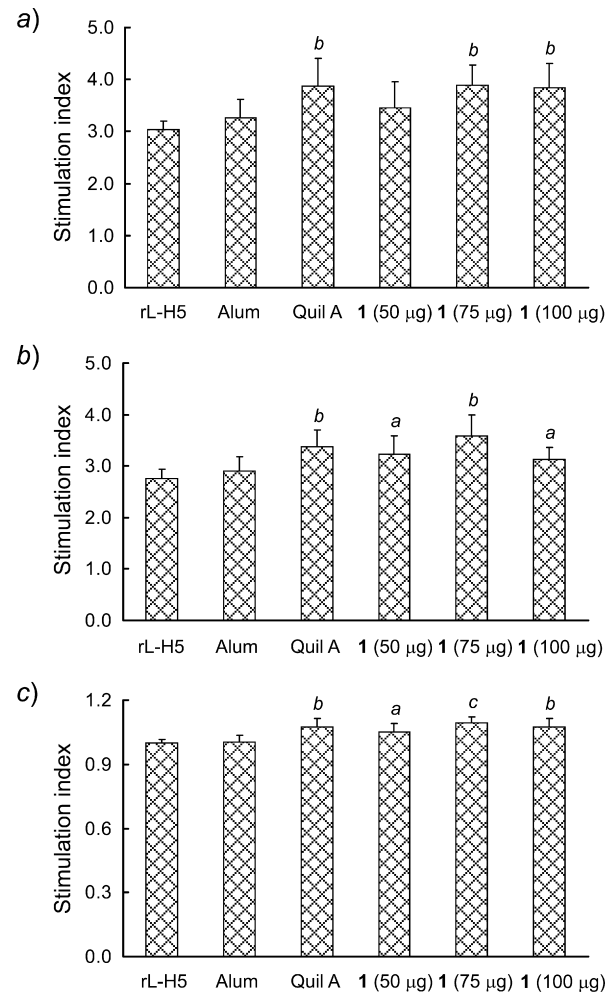
Fig. 3.

A, 5A - 5

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

A, 5A - 5

($P < 0.01$, $P < 0.001$).



1. Effects of Alum, Quil A, and 1 on Con A-, LPS-, and H5Ag-stimulated splenocyte proliferation in mice immunized with rL-H5.

sc - 5 (10^6)
 A (200 µ), A (25 µ), 1 (50, 75, 100 µ)
 1 15. (n = 5).
 Exper. Part).
 5 - 5 A : $P < 0.05$ (a), $P < 0.01$ (b), $P < 0.001$ (c).

5A - 2 A 2 ,
 - 5/ A - 5/1
 ($P < 0.05$, $P < 0.01$, $P < 0.001$).
 - 5/1 (75 µ)
 (P > 0.05)
 2 5
 1 5A -

682 C & B . 7 (2010)

1/ 2 1.40 1.39, 2- 1.03

1.01, 1/ 2 - 5/ 1 (75 μ) 0.95 0.98,

Effects of 1 on the mRNA Expression of Cytokines and Transcription Factors.

1 A 1 (-γ) 2 (-10)

- 5 A A-3 (Table 1),

Fig. 4 Table 2. A (25 μ) 1 (75 μ) A A-3 (P<0.01

2 -10 P<0.001), 1 -γ

- (P<0.01 P<0.001) -10

A A-3 A (P<0.01 P<0.001). (P>0.05)

-γ - A - 5

- 5/A , 1 - 1 2

- 5. A A-3

1. Sequences of the Specific Primers Used for RT-PCR

A)	5'-CCCACA AAA CAAC CAC-3'	570
	5'-CA A AACAC A-3'	
-γ	5'- AAC C ACACAC CA C -3'	459
	5'-C AC CC CC C CC A -3'	
-10	5'-CCA ACC A AA A -3'	324
	5'- C A CC A CCA CA AC CAA-3'	
-	5'AACCA A CC CCCA C-3'	436
	5'- C CCAC AA A A -3'	
A A-3	5'- AA CA CCA ACCC AAAC-3'	255
	5'-ACCCA C ACCA C-3'	

) A : -3- .

Discussion.

, B

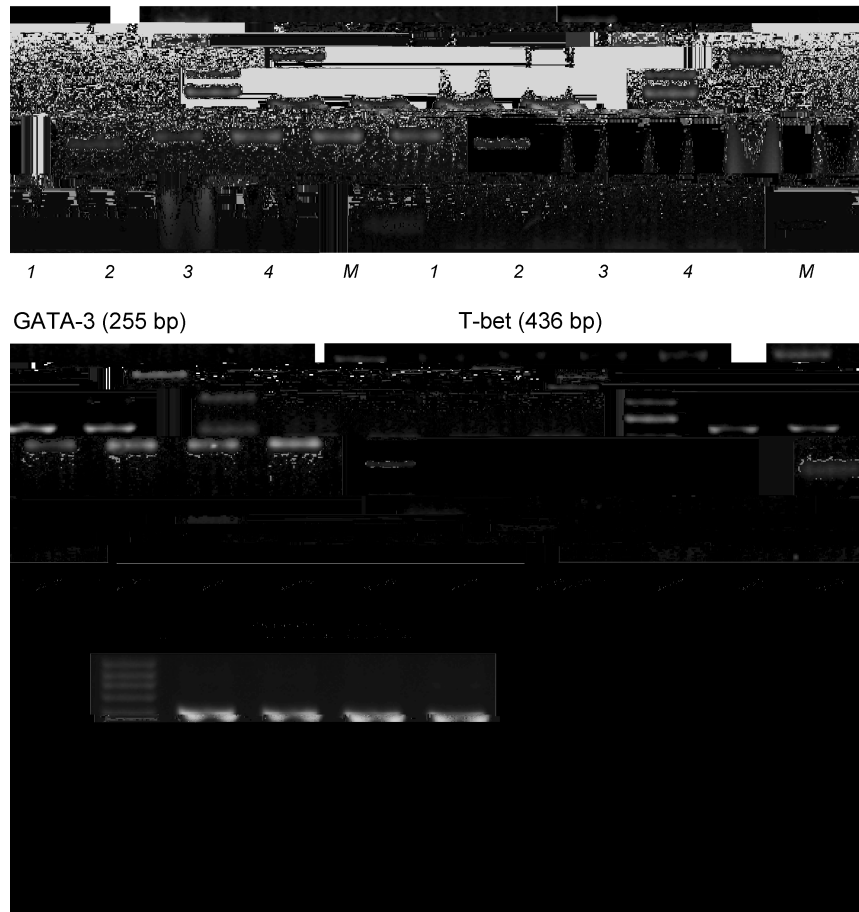
, B

36 . (A A)

B -

C

37 39 .



4. Effects of Alum, Quil A, and **1** on the mRNA expression of GAPDH, cytokines, and transcription factors in splenocytes from mice immunized with rL-H5.

5 (10⁶) A (200 μ), A (25 μ), **1** (75 μ)
 15. A , -γ, -10, - , A A-3
 (Table 1 Exper. Part). A 1.5%
 GoldView . Lane M: A , Lane 1: - 5, Lane 2: - 5
 A , Lane 3: - 5 A, Lane 4: - 5 **1** (75 μ).

32 40 .
 41 42 .
1
 - 5.

2. *Effects of Alum, Quil A, and 1 on the mRNA Expression of Cytokines and Transcription Factors in Splenocytes from Mice Immunized with rL-H5.* A \nearrow \nearrow - C

(Table 1 Exper. Part).

5 *GoldView*

5.

A

A

1.5%

$$\pm (n-3).$$

	- 5	- 5 A (200 μ)	- 5 A (25 μ)	- 5 1 (75 μ)
γ	0.25 ± 0.01	0.28 ± 0.01	0.56 ± 0.06 (c)	0.50 ± 0.01 (c)
γ	0.42 ± 0.03	0.50 ± 0.09	0.72 ± 0.08 (b)	0.58 ± 0.05 (b)
γ	0.20 ± 0.03	0.57 ± 0.05 (c)	0.57 ± 0.04 (c)	0.42 ± 0.03 (c)
A A-3	0.33 ± 0.03	0.65 ± 0.06 (b)	0.53 ± 0.09 (b)	0.55 ± 0.13 (b)

) - 5 (b) $P < 0.01$ (c) $P < 0.001$.

[illegible]

Experimental Part

General.

()- (- 5), -
5- (A₁) (A) 5A)
5 A₁ (5A)
Harbin Weike Biotechnology Development Company (, C). 3-(4,5-
-2,5- 2H-), A, -
RPMI 1640 , Sigma
Chemical Co. (, A). 1, 2 , 2
Southern Biotech. Assoc. (B , A , A), A
Brenntag Nordic A/S (). Trizol Invitrogen (A), RevertAid
Fermentas (A), (C)
Biobasic (C), ()₁₈ A Sangon (C).
(C) Hangzhou Sijiqing Corp., (A)
Zhejiang Wanma Pharm Co. Ltd. (Z , C).
Platycodin D (Platycodigenin 3- -β-D-Glucopyranosyl-28- -[β-D-apiofuranosyl-(1→3)-β-D-xy-
lopyranosyl-(1→4)-α-L-rhamnopyranosyl-(1→2)-α-L-arabinopyranoside]; **1**). (C₅₇ 92 28,
1224.5775) *P. grandiflorum*,

.09% C. **1** (4 /) 0.89%
pore) Limulus
0.5 ()/ .

C (5) 18 22
ental Animal Center (, C ; . 22-2001001)
ad libitum,
24±1°, 50±10% . 12-

y
C
- C
sc) - 5 (10

A (200 μ), A (25 μ), **1** (50, 75, 100 μ) 0.2 50/
. A 2 .
- 5.

Splenocyte Proliferation Assay.

Hank' (B , Sigma),

w/v). A (380g 4° 10),
(RPMI 1640 12 M HEPES (7.1),
0.05 M 2- (100 /), (100 μ /), 10% C).
95%. 96-
(Nunc) 5×10⁶ / 100 μ , C A (5 μ /),
(10 μ /), 5A (0.125 (A)/),
. 200 μ . A 37°
5% C₂ 44 , 50 μ 1400g 5 ,
(200 μ) 15 ,
570 630-
- .

$$\begin{array}{c} 2 \quad 37^\circ, \quad \tau_y \\ (3 \times \\ B_1) A_1 \\ 74^\circ 10' 15.95530) - 3 \quad (7-23310.16) - 21.16) 12231300(948.6107) - (B_1) \quad 71 \quad (1.98.9233) \quad 99 \quad (2.5463) \\ 6 \quad (1.4) \quad A_{23.2989} \quad 21(1-22521) \quad (1.928 \quad 200.12762) \quad (1.104.1) \quad 19 \quad (20) \end{array}$$

- Received May 28, 2009