CHAPTER III

RESULTS

Most myometrial preparations exhibited persistent spontaneous contractile activity after equilibration. The tracing of spontaneous contraction of isolated human myometrium during proliferative phase of the menstrual cycle is shown in Fig. 4a. All the contractile responses shown in Figs. 6 to 10 are presented as stress, that is, force/cross-sectional area of the muscle strips.

Contractile Responses of Isolated Human Myometrium to Various Doses of Allicin

The tracings of contractile responses of isolated human myometrium after the applications of 0.4, 0.6, and 0.8 ml of 4 mg/ml allicin are shown in Figs. 4b, c, and d, respectively. It was shown that the force of contraction was affected while rate and forms were unchanged. Fig. 5 shows the contractile responses to various doses of allicin (0.2 to 0.8 ml of 4 mg/ml) on strips of human myometrium during proliferative phase of the menstrual cycle. As shown in Table 4 and Fig. 5, allicin at doses of 0.2, 0.3, and 0.5 ml of 4 mg/ml slightly increased the force and stress of contraction without significant effect. At a dose of 0.4 ml of 4 mg/ml, allicin significantly ($p<0.05$) increased the

force and stress of contraction. At doses of 0.6 and 0.8 ml of 4 mg/ml allicin, the significant decreases ($p<0.05$) in force and stress were observed.

Table 4. Contractile Responses to Various Doses of Allicin on Strips of Human Myometrium During Proliferative Phase of the Menstrual Cycle.

Experiment	Force (gm)	Stress (gm/cm^2)
Control (n = 36)	2.04 ± 0.15	22.69 ± 1.71
Allicin (4 mg/ml; ml)		
0.2 (n = 13)	2.47 ± 1.02	27.40 ± 11.38
0.3 (n = 13)	2.54 ± 0.82	28.22 ± 9.11
0.4 (n = 15)	3.05 ± 0.33*	33.89 ± 3.71*
0.5 (n = 13)	2.26 ± 0.71	25.13 ± 7.87
0.6 (n = 13)	1.89 ± 0.88	20.88 ± 10.09
0.8 (n = 13)	1.95 ± 0.65	21.64 ± 7.22

*$p<0.05$

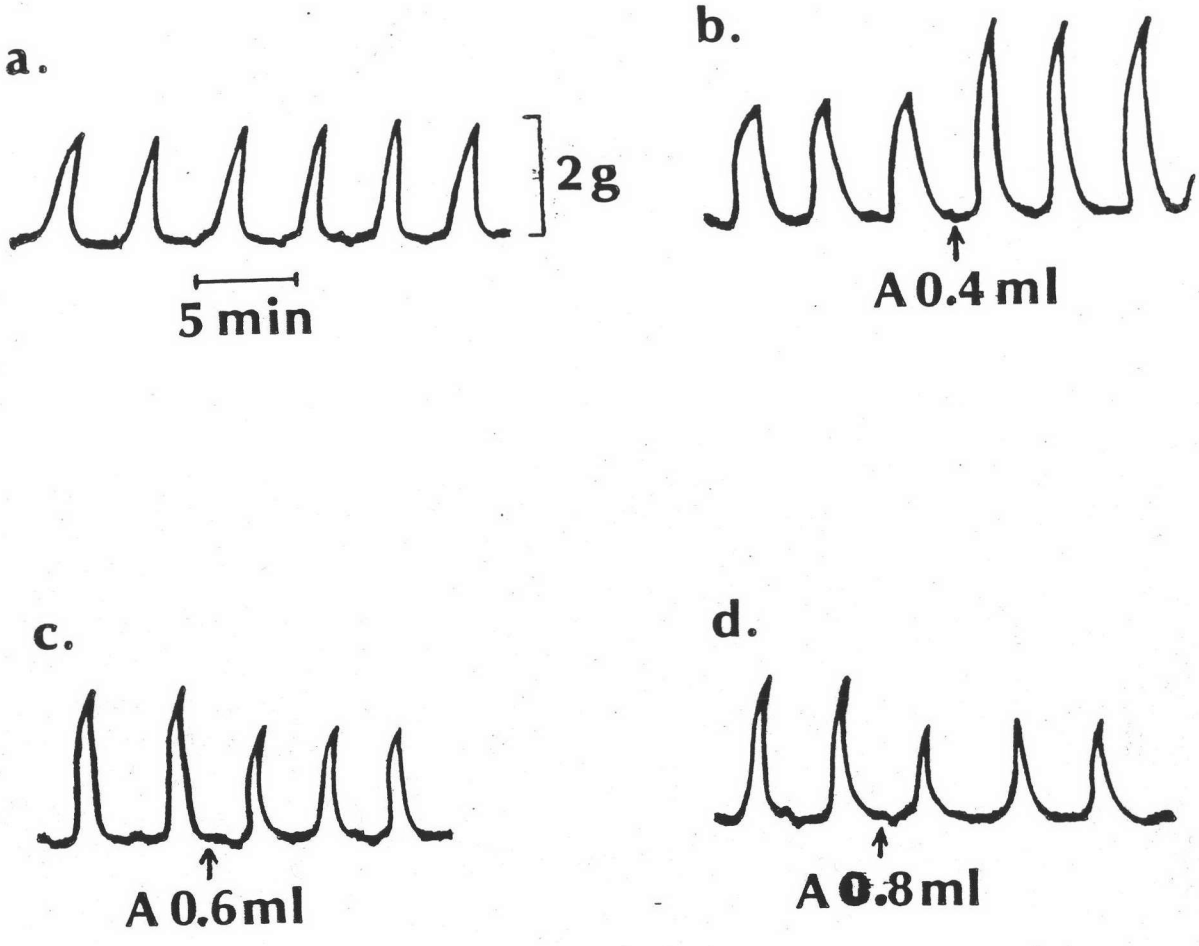

Fig. 4. a. Tracing shows spontaneous contraction of a strip of human myometrium during proliferative phase of the menstrual cycle.
b-d. Contractile responses after the applications of 0.4, 0.6, and 0.8 ml of allicin (4 mg/ml).

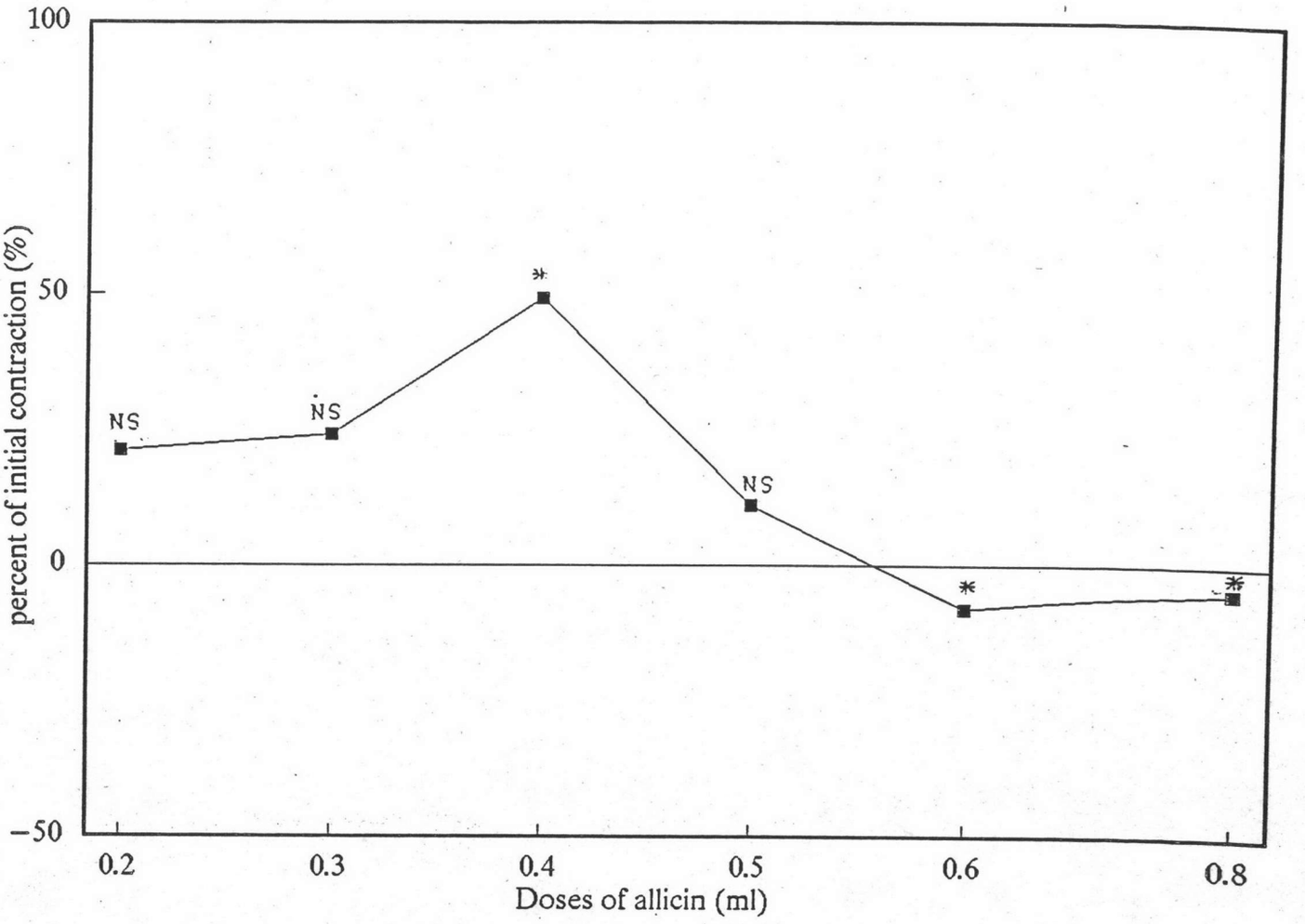

Fig. 5. Contractile responses to various doses of allicin (0.2-0.8 ml of 4 mg/ml) on strips of human myometrium during proliferative phase of the menstrual cycle (n = 13-36); *$p<0.05$, NS = nonsignificant difference.

Contractile Responses to Allicin in the Presence of Various Antagonists

1. Atropine as a muscarinic antagonist.

Fig. 6 shows the contractile responses to 0.4 ml of 4 mg/ml allicin in the presence and absence of 0.2 ml of 10^{-4} M atropine on strips of human myometrium during proliferative phase of the menstrual cycle. As shown in Table 5 and Fig. 6, 0.2 ml of 10^{-4} M atropine significantly ($p<0.05$) decreased the force and stress of contraction. Atropine elicited no significant effect on the contractile responses to allicin.

Table 5. Contractile Responses to Allicin (A) at a Dose of 0.4 ml of 4 mg/ml in the Presence and Absence of 0.2 ml of 10^{-4} M Atropine (Atro.) on Strips of Human Myometrium During Proliferative Phase of the Menstrual Cycle.

Experiment	Force (gm)	Stress (gm/cm^2)
Cont. (n = 36)	2.04 ± 0.15	22.69 ± 1.71
Atro. (n = 6)	1.55 ± 0.32*	17.22 ± 3.60*
A. (n = 15)	3.05 ± 0.33	33.89 ± 3.71
Atro. + A. (n = 6)	2.47 ± 0.64 NS	27.40 ± 7.11 NS

*$p<0.05$; NS = nonsignificant difference.

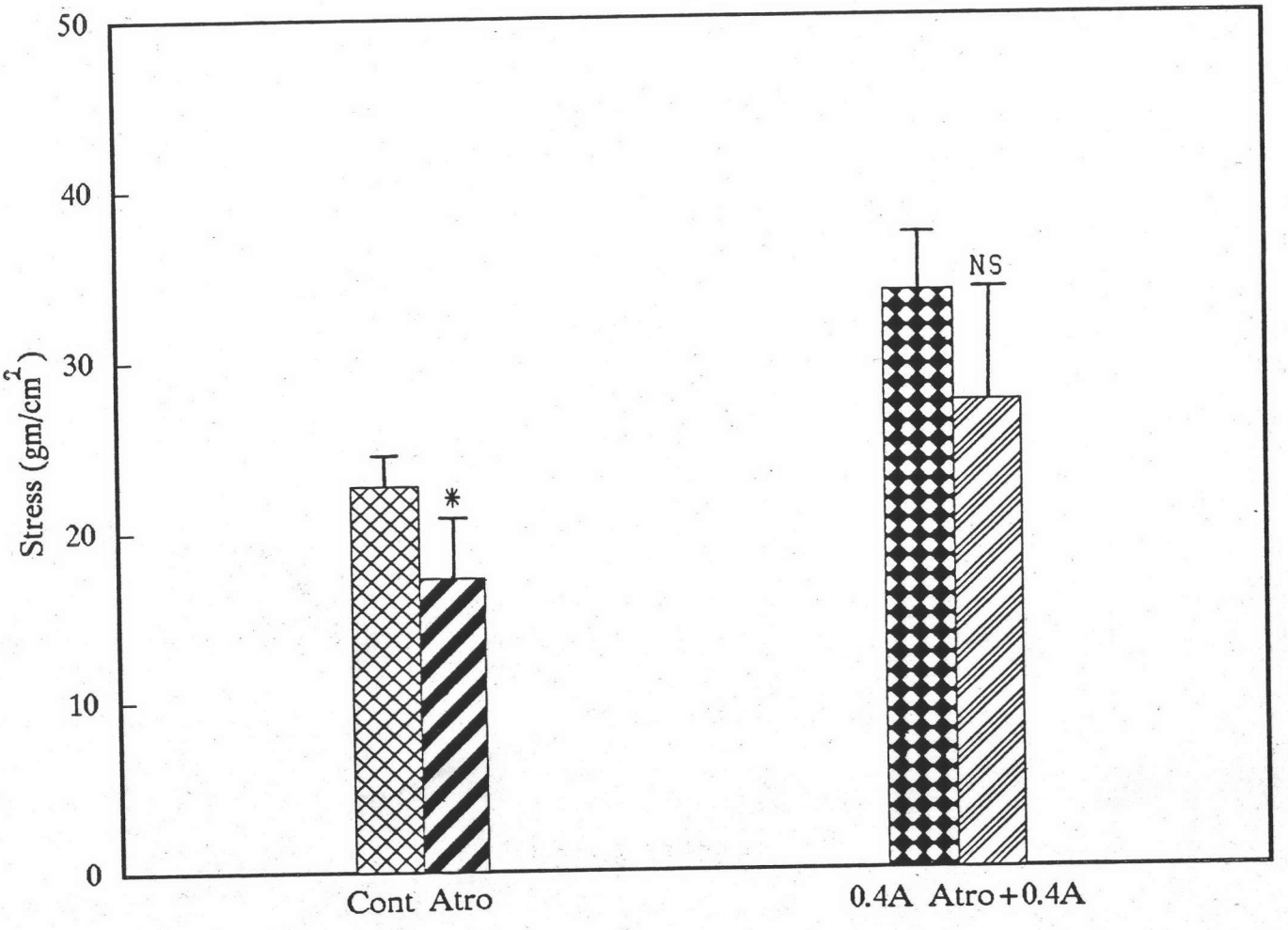

Fig. 6. Contractile responses to allicin (A) at a dose of 0.4 ml of 4 mg/ml in the presence (n = 6) and absence (n = 15) of 0.2 ml of 10^{-4} M atropine (Atro.) on strips of human myometrium during proliferative phase of the menstrual cycle. Values are expressed as mean $\pm$ SEM; $^{*}p<0.05$, NS = nonsignificant difference.

2. Phentolamine as an alpha-adrenergic antagonist.

Fig. 7 shows the contractile responses to 0.4 ml of 4 mg/ml allicin in the presence and absence of 0.2 ml of 10^{-4} M phentolamine on strips of human myometrium during proliferative phase of the menstrual cycle. As shown in Table 6 and Fig. 7, 0.2 ml of 10^{-4} M phentolamine significantly ($p<0.05$) decreased the force and stress of contraction. Phentolamine elicited no significant effect on the contractile responses to allicin.

Table 6. Contractile Responses to Allicin (A) at a Dose of 0.4 ml of 4 mg/ml in the Presence and Absence of 0.2 ml of 10^{-4} M Phentolamine (Phen.) on Strips of Human Myometrium During Proliferative Phase of the Menstrual Cycle.

Experiment	Force (gm)	Stress (gm/cm^2)
Cont. (n = 36)	2.04 ± 0.15	22.69 ± 1.71
Phen. (n = 6)	1.66 ± 0.24*	18.40 ± 2.62*
A. (n = 15)	3.05 ± 0.33	33.89 ± 3.71
Phen. + A. (n = 6)	2.71 ± 0.33 NS	30.13 ± 3.71 NS

*$p<0.05$; NS = nonsignificant difference.

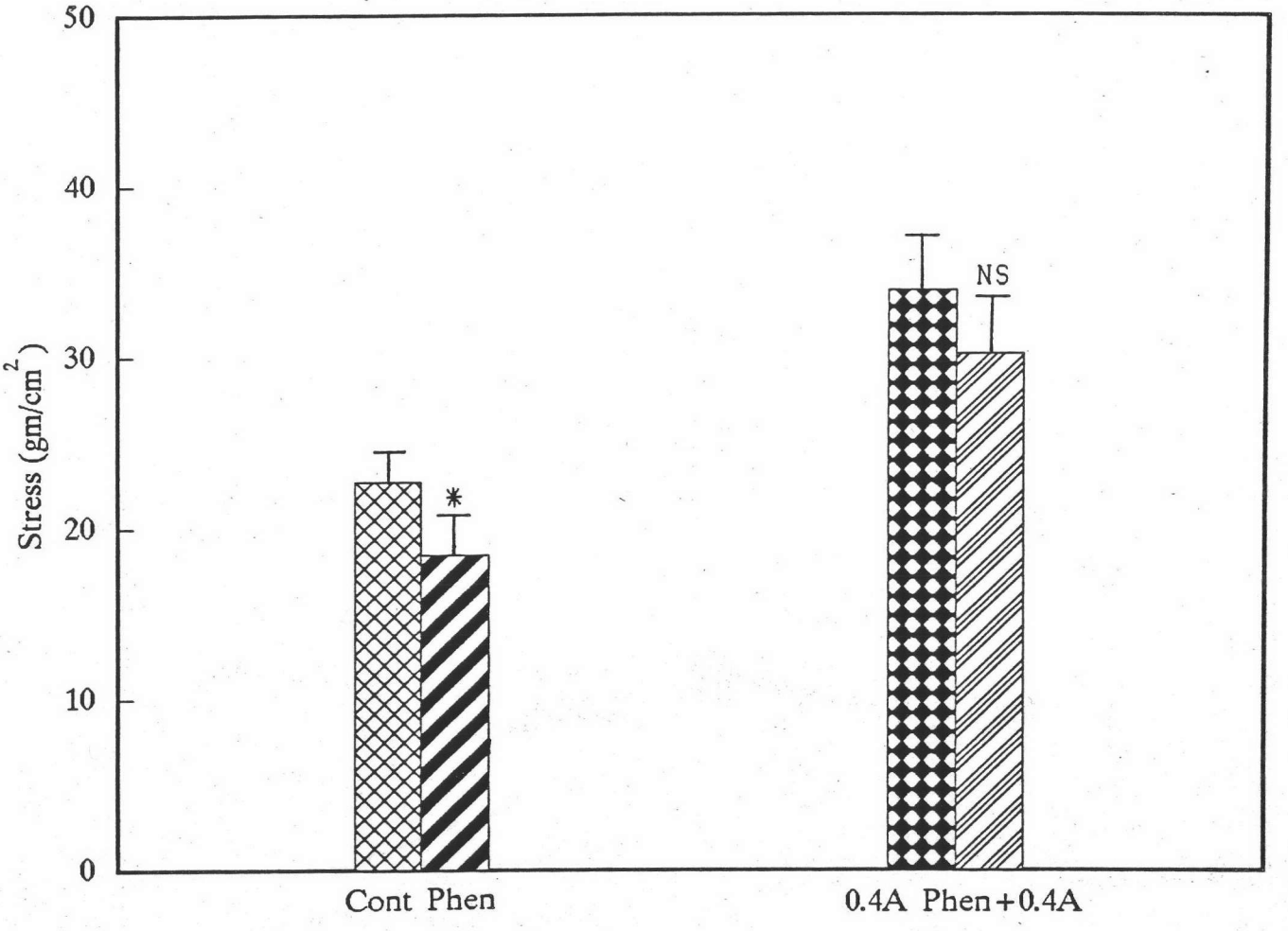

Fig. 7. Contractile responses to allicin (A) at a dose of 0.4 ml of 4 mg/ml in the presence (n = 6) and absence (n = 15) of 0.2 ml of 10^{-4} M phentolamine (Phen) on strips of human myometrium during proliferative phase of the menstrual cycle. Values are expressed as mean ± SEM; $^{*}p<0.05$, NS = nonsignificant difference.

3. Propranolol as a beta-adrenergic antagonist.

Fig. 8 shows the contractile responses to 0.4 ml of 4 mg/ml allicin in the presence and absence of 0.2 ml of 10^{-4} M propranolol on strips of human myometrium during proliferative phase of the menstrual cycle. As shown in Table 7 and Fig. 8, no significant effect of 0.2 ml of 10^{-4} M propranolol on the force and stress of contraction was seen. Propranolol was without significant effect on the contractile responses to allicin.

Table 7. Contractile Responses to Allicin (A) at a Dose of 0.4 ml of 4 mg/ml in the Presence and Absence of 0.2 ml of 10^{-4} M Propranolol (Prop.) on Strips of Human Myometrium During Proliferative Phase of the Menstrual Cycle.

Experiment	Force (gm)	Stress (gm/cm^2)
Cont. (n = 36)	2.04 ± 0.15	22.69 ± 1.71
Prop. (n = 6)	2.09 ± 0.51 NS	23.22 ± 5.67 NS
A. (n = 15)	3.05 ± 0.33	33.89 ± 3.71
Prop. + A.(n = 6)	3.03 ± 0.32 NS	31.34 ± 3.71 NS

NS = nonsignificant difference.

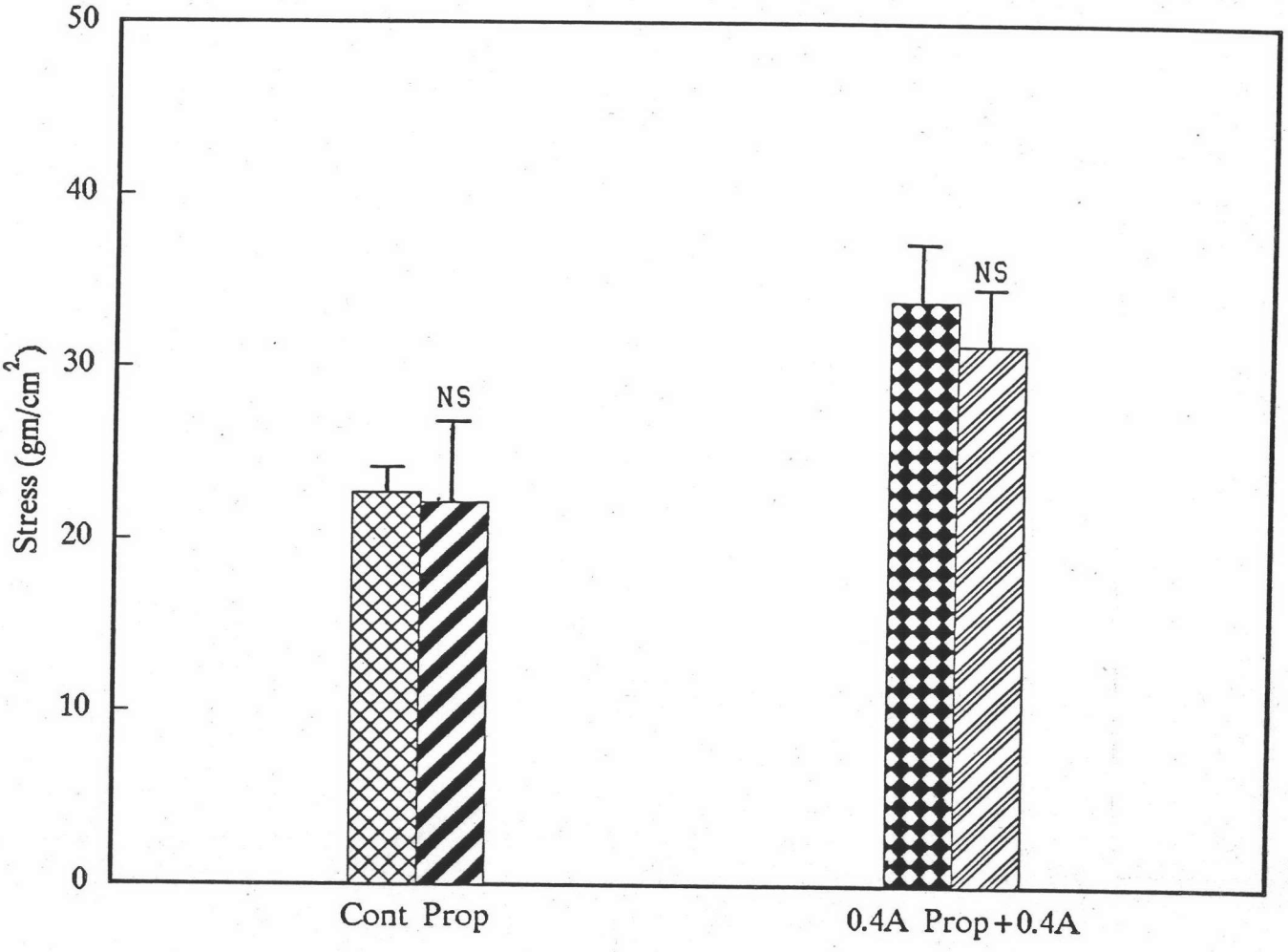

Fig. 8. Contractile responses to allicin (A) at a dose of 0.4 ml of 4 mg/ml in the presence (n = 6) and absence (n = 15) of 0.2 ml of 10^{-4} M propranolol (Prop.) on strips of human myometrium during proliferative phase of the menstrual cycle. Values are expressed as mean ± SEM; NS = nonsignificant difference.

4. Verapamil as a calcium channel blocker.

Fig. 9 shows the contractile responses to 0.4 ml of 4 mg/ml allicin in the presence and absence of 0.2 ml of 10^{-5} M verapamil on strips of human myometrium during proliferative phase of the menstrual cycle. As shown in Table 8 and Fig. 9, 0.2 ml of 10^{-5} M verapamil significantly ($p<0.05$) decreased the force and stress of contraction. Verapamil elicited significantly inhibitory effect on the contractile responses to allicin ($p<0.05$).

Table 8. Contractile Responses to Allicin (A) at a Dose of 0.4 ml of 4 mg/ml in the Presence and Absence of 0.2 ml of 10^{-5} M Verapamil (V.) on Strips of Human Myometrium During Proliferative Phase of the Menstrual Cycle.

Experiment	Force (gm)	Stress (gm/cm^2)
Cont. (n = 36)	2.04 ± 0.15	22.69 ± 1.71
V. (n = 6)	1.39 ± 0.34*	13.53 ± 3.73*
A. (n = 15)	3.05 ± 0.33	33.89 ± 3.71
V. + A.(n = 6)	0.96 ± 0.26*	10.69 ± 2.93*

*$p<0.05$

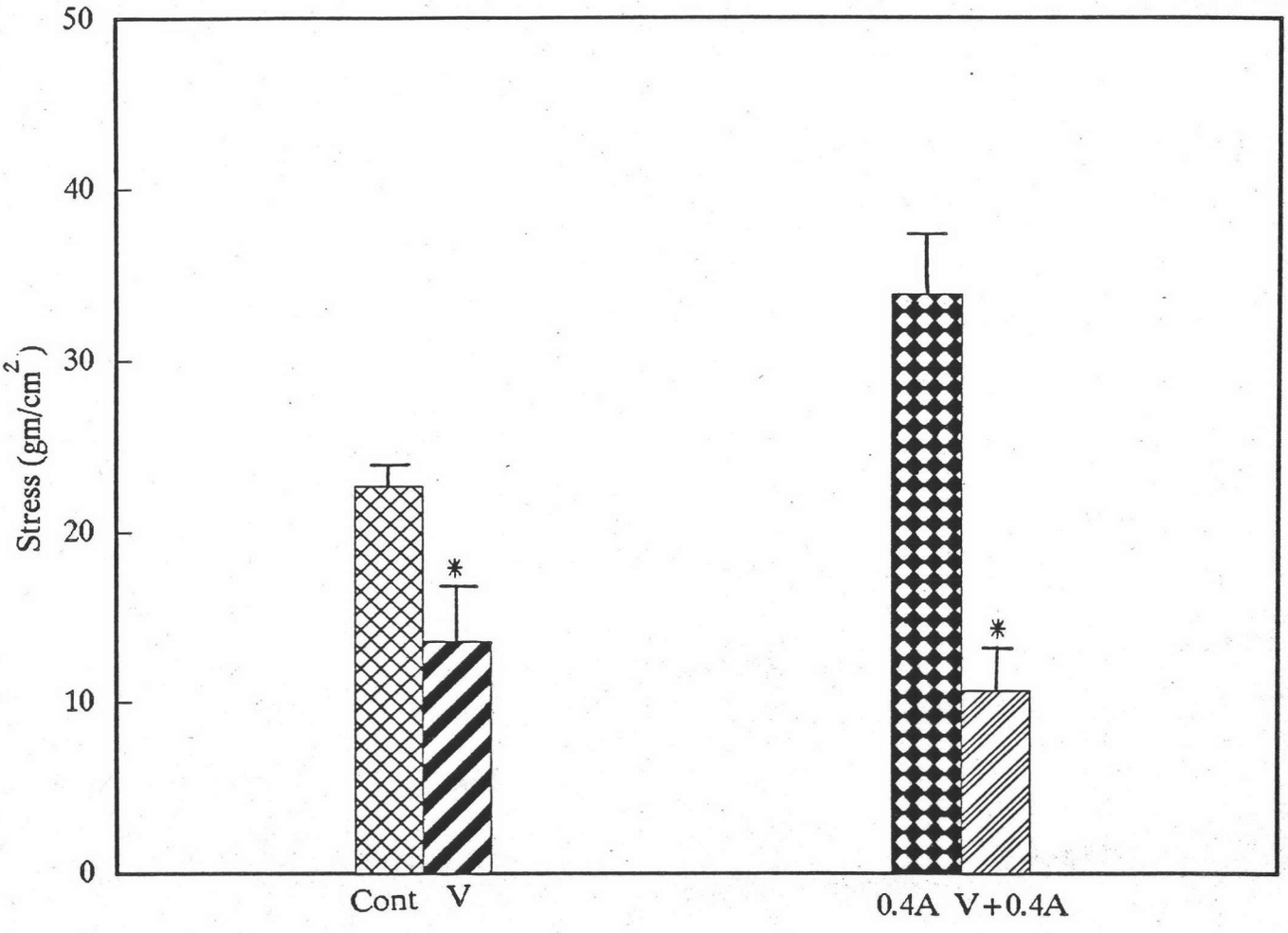

Fig. 9. Contractile responses to allicin (A) at a dose of 0.4 ml of 4 mg/ml in the presence (n = 6) and absence (n = 15) of 0.2 ml of 10^{-5} M verapamil (V) on strips of human myometrium during proliferative phase of the menstrual cycle. Values are expressed as mean $\pm$ SEM; $^{*}p<0.05$.

5. Nifedipine as a calcium channel blocker.

Fig. 10 shows the contractile responses to 0.4 ml of 4 mg/ml allicin in the presence and absence of 0.2 ml of 10^{-5} M nifedipine on strips of human myometrium during proliferative phase of the menstrual cycle. As shown in Table 9 and Fig. 10,0.2 ml of 10^{-5} M nifedipine significantly ($p<0.05$) decreased the force and stress of contraction. Nifedipine elicited significantly inhibitory effect on the contractile responses to allicin ($p<0.05$).

Table 9. Contractile Responses to Allicin (A) at a Dose of 0.4 ml of 4 mg/ml in the Presence and Absence of 0.2 ml of 10^{-5} M Nifedipine (Nif.) on Strips of Human Myometrium During Proliferative Phase of the Menstrual Cycle.

Experiment	Force (gm)	Stress (gm/cm^2)
Cont. (n = 36)	2.04 ± 0.15	22.69 ± 1.71
Nif. (n = 6)	1.46 ± 0.30*	16.18 ± 3.38*
A. (n = 15)	3.05 ± 0.33	33.89 ± 3.71
Nif. + A.(n = 6)	1.67 ± 0.33*	11.78 ± 3.62*

*$p<0.05$

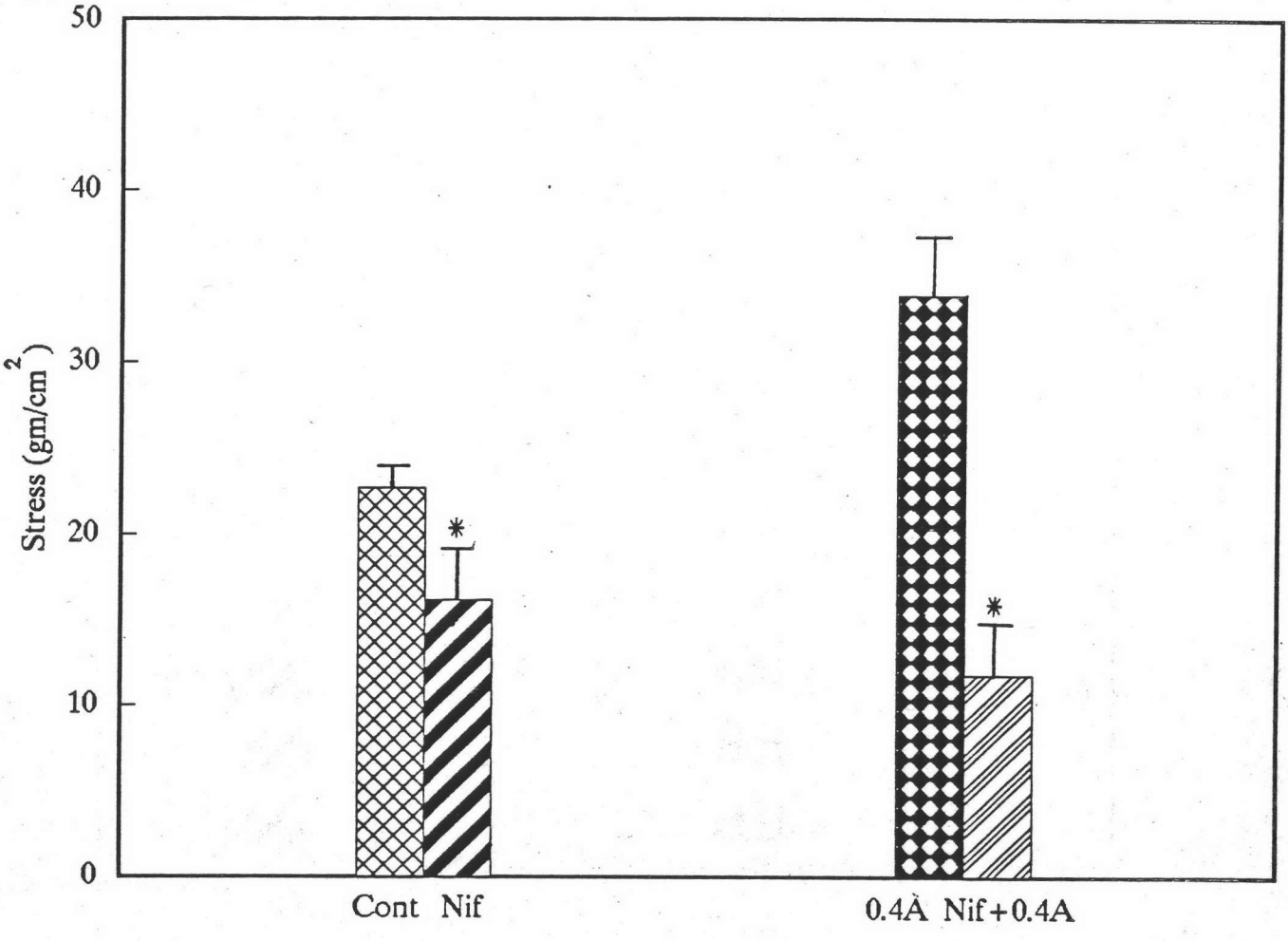

Fig. 10. Contractile responses to allicin (A) at a dose of 0.4 ml of 4 mg/ml in the presence (n = 6) and absence (n = 15) of 0.2 ml of 10^{-5} M nifedipine (Nif.) on strips of human myometrium during proliferative phase of the menstrual cycle. Values are expressed as mean ± SEM; $^{*}p<0.05$.