

Immunomodulatory Activity of Ingredient of PHYTOCEE® : *Withania somnifera*

OBJECTIVE

To investigate the adaptogenic activity of a standardized extract of *Withania somnifera* (WS) roots against a rat model of chronic stress (CS).

MATERIALS AND METHODS

Adult male Wistar strain rats (180 –220 g) were used. The stress procedure was mild, unpredictable foot shock, administered once daily for 21 days to adult male Wistar rats. Crude Panax ginseng (PG) root powder was used as the standard drug for comparison of adaptogenic activity. WS and PG were suspended in 0.3% carboxymethyl cellulose in distilled water. WS was used at two dose levels, 25 and 50 mg/kg, and PG at the dose of 100 mg/kg. The drugs were administered orally (po) for 21 days, 1 h before foot shock. Control animals received only the vehicle in the same volume used for drug administration (2.5 ml/kg po). The cell-mediated immune response was evaluated through measuring differences in the footpad thickness (left-right). Humoral immune response was assessed by phagocytosis percent, phagocytosis index and digestion index.

RESULTS

Table 1. Effects of WS and PG on CS-induced suppression of peritoneal macrophage activity in rats

Treatment groups * (mg/kg, po)	n	% Phagocytosis	Ingestion index	Digestion index
Vehicle (V)	12	58.6±9.8	3.3±0.8	1.6±0.9
WS (50)	6	78.2±6.9 ^a	4.9±0.6 ^a	2.2±0.8
PG (100)	6	62.4±7.8	3.9±0.9	1.8±0.9
CS	10	36.4±2.6 ^a	1.4±0.6 ^a	0.9±0.2
WS (25)+CS	8	55.0±3.8 ^b	2.0±0.8 ^b	1.4±0.6
WS (50)+CS	8	62.9±5.8 ^b	2.8±0.6 ^b	1.9±0.4 ^b
PG (100)+CS	8	54.9±4.8 ^b	2.2±0.8 ^b	1.6±0.5 ^b

Table 2. Effects of WS and PG on an immunologic model of pedal inflammation in rats

Treatments * (mg/kg, po)	n	Increase in paw volume (units)
Vehicle (V)	12	3.2±0.8
CS	10	0.8±0.2 ^a
WS (25)+CS	8	1.4±0.6 ^b
WS (50)+CS	8	2.2±0.9 ^b
PG (100)+CS	8	1.9±0.6 ^b

Values are expressed as mean ± SEM; ^ap<0.05 different from group V; ^bp<0.05 different from group CS; *WS, PG and V were administered once daily for 21 days 1 h before CS

CONCLUSIONS

The chronic stress induced perturbation like immunosuppression was attenuated by *Withania somnifera* (25 and 50 mg/kg po) and by *Panax ginseng* (100 mg/kg po), administered 1 h before foot shock for 21 days.

OUTCOME

These findings indicate that *Withania somnifera*, like *Panax ginseng*, has significant antistress/adaptogenic activity through immunomodulatory actions confirming the clinical use of the *Withania somnifera* in Ayurveda.

Reference:

Bhattacharya S K, Muruganandam A V. Adaptogenic activity of *Withania somnifera*: an experimental study using a rat model of chronic stress. Pharmacol Biochem Behav. 2003;75(3):547-55.