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Key Words

Arginine
Burn
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Effects of Arginine Supplementation on Humoral Immunity in Burned Rats

ABSTRACT

Background. Previous studies have shown that arginine (Arg) enhances immune function in severely injured animals and patients. However, there is no study investigating the effect of Arg on humoral immunity and survival rate in burned rats complicated with infection.

Aim. To evaluate the effect of Arg supplementation on immune response in burned rats vaccinated with a detoxified *Pseudomonas* exotoxin A linked with the outer membrane proteins named PEIF. Also, the survival rate of burned rats complicated with *Pseudomonas aeruginosa* (*P. aeruginosa*) was evaluated.

Methods. There were 2 experiments in this study. Experiment 1: Rats were assigned to 2 groups. One group was fed Arg, while the other group was replaced with glycine. The 2 groups were isonitrogenous. Rats were immunized twice with PEIF, and the production of specific antibodies against PEIF was measured every week. After 8 weeks, all rats received a 30% body surface area burn injury. Rats were sacrificed 24 h after the burn and plasma nitric oxide, T lymphocyte subpopulations, and specific antibody production were analyzed. Experiment 2: Thirty rats were divided into 2 groups and vaccinated as described in experiment 1; after the burn, rats were infected with *P. aeruginosa*.

Results. There were no significant differences in specific antibody production or T lymphocyte subpopulations between the 2 groups. The survival rate of vaccinated burned rats after bacterial infection did not differ between the 2 groups.

Conclusion. These results suggest that Arg supplementation demonstrated no appreciable benefit for humoral immunity or T lymphocyte populations in vaccinated burned rats. Also, Arg supplementation did not improve the survival rate when vaccinated rats were complicated with *P. aeruginosa* infection.

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INTRODUCTION

The use of potent antibiotics and strong medical support is common in the treatment of critically ill pa-

tients, although side effects of the medications are also often observed. Recently, immunonutrition has elicited great interest because some specific nutrients may have effects on stimulating the immune function in

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