Letter to the Editor

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Effect of Inhaled Ingredients of a Commercial Cyclosporin A Ampoule on Airway Inflammation

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Dear Sir,

We have published a study documenting the effect of inhaled cyclosporin A (Cyc-A) on the rat airway inflammation in this issue [1]. Our approach to assess the effect of pure Cyc-A was not rigorous since we used a commercial Cyc-A ampoule (50 mg cyclosporin A, 278 mg ethanol and 650 mg castor oil in a 1-ml intravenous ampoule; Sandoz, Basel, Switzerland). We have recently studied 10 additional rats to evaluate the effect of the ingredients (ethanol, castor oil) on the airway inflammation of sensitized rats. Twenty-one days after the initial intraperitoneal ovalbumin injection (1 mg ovalbumin and 100 mg $Al(OH)_3$ in 1 ml 0.9% NaCl), animals were administered a nebulized ethanol and castor oil solution (278 mg ethanol and 650 mg castor oil in 1 ml 0.9% NaCl, adjusted dose: 0.4 ml/kg diluted to 2 ml with 0.9% NaCl) 1 h prior to exposure to nebulized ovalbumin; the same procedure was repeated on the 2nd day. 18–24 h later, bronchoalveolar lavage (BAL), peripheral blood and lung tissue sampling were performed as previously described [2, 3].

There was a nonsignificant decrease in the percentage of neutrophils (26.3 ± 26.8 vs. 7.4 ± 2.1%; $p < 0.06$), a significant decrease in macrophages (66.1 ± 7.7 vs. 63.6 ± 7.2%; $p < 0.02$), a nonsignificant increase in lymphocytes (21.1 ± 12.4 vs. 24.4 ± 7.0%; $p > 0.05$) and a significant increase in eosinophils (2.4 ± 2.6 vs. 4.7 ± 2.0%; $p < 0.02$) in the BAL of the ingredient pretreated group as compared with the group pretreated with the commercial Cyc-A ampoule.

On light microscopic examination of the lung tissue samples, a significantly higher eosinophil count per high-powered field (HPF) (×400) (0 ± 0 vs. 2.6 ± 3.9/HPF in trachea, $p < 0.05$; 4.3 ± 9.4 vs. 16.1 ± 12.4 in bronchi, $p < 0.008$; 19.4 ± 38.4 vs. 35 ± 2.2 in bronchioles, $p < 0.02$ was obtained in the ingredient-pretreated group compared to the group pretreated with the commercial Cyc-A ampoule.

The percentage of peripheral blood eosinophil was significantly decreased in the ingredient-treated group (6.9 ± 4.7 vs. 2.2 ± 2.7%; $p < 0.004$) compared with the group treated with the commercial Cyc-A ampoule.

Our former study published in this issue demonstrated that commercial Cyc-A ampoule inhalation inhibits eosinophilia nonsignificantly in BAL and significantly in lung tissue in sensitized rat airway walls, with an increase of neutrophils in BAL and increase of peripheral blood eosinophils. This second part of the study showed that ingredients have no effect on BAL and lung tissue eosinophilia. It is likely that the immunosuppressive effect of the commercial Cyc-A ampoule is not mediated by the ingredients.

Interestingly, we were unable to find neutrophilia in BAL and lung tissue or eosinophilia in the peripheral blood in rats pretreated with the ingredients. We postulate that eosinophils migrate from the lung to the peripheral blood with pure Cyc-A; however, we are unable to explain the pulmonary neutrophilia due to pure Cyc-A and this should be tested prospectively. Nevertheless, the definitive suggestions as to the most appropriate Cyc-A therapy in asthma still await the results of pure Cyc-A solution studies.

References

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