EFFECT OF MACROLIDE ANTIBIOTICS ON NITRIC OXIDE SYNTHASE AND XANTHINE OXIDASE ACTIVITIES, AND MALONDIALDEHYDE LEVEL IN ERYTHROCYTE OF THE GUINEA PIGS WITH EXPERIMENTAL OTITIS MEDIA WITH EFFUSION

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Although the long-term administrations of macrolide antibiotics are effective for diffuse panbronchiolitis, otitis media with effusion (OME), and some other diseases, their mechanism of action has not been fully understood. In order to elucidate the mechanisms of possible effects of macrolide antibiotics on activities of erythrocyte nitric oxide synthase (NOS), xanthine oxidase (XO), and malondialdehyde (MDA) levels in experimental OME, we aimed to evaluate the effect of macrolide antibiotics (erythromycin, azithromycin, roxithromycin, and clarithromycin) using an experimental guinea pig otitis media model.

Erythrocyte NOS, XO activities, and MDA level were measured in all groups. Erythrocyte NOS activities were significantly higher in erythromycin-, azithromycin-, roxithromycin-, and clarithromycin-treated groups than in the experimental group. Erythrocyte XO activities were significantly lower in erythromycin-, azithromycin-, roxithromycin-, and clarithromycin-treated groups than in the control group. However, erythrocyte XO activities in experimental group were significantly higher than those of control group. Erythrocyte MDA levels were significantly lower in erythromycin-, azithromycin-, roxithromycin-, and clarithromycin-treated groups than those of the experimental group. The MDA levels in erythromycin- and roxithromycin-treated groups were significantly higher than those of azithromycin-treated group. The MDA levels in azithromycin-treated group were significantly lower than those of roxithromycin-treated group.

In conclusion, the present study shows that the macrolide antibiotics (erythromycin, azithromycin, roxithromycin, and clarithromycin) increase NOS activity, decrease XO activity and MDA level, which is an important indicator of oxidative stress.

Key words: nitric oxide synthase, malondialdehyde, xanthine oxidase, otitis media with effusion, oxidative stress

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