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Role of interleukin-1beta and nitric oxide in the antiinflammatory dynamics of acetylsalicylic acid in carrageenan-induced paw oedema model

Nahed M A Hassanein [1], Roba M Talaat, Mohamed Raouf Hamed

National Organization for Drug Control and Research, Agouza, Cairo, Egypt.

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The present study aimed to analyze the role of interleukin-1beta (IL-1beta) and nitric oxide (NO) in the development of peripheral acute inflammation in carrageenan-induced paw edema model in the presence/absence of acetyl salicylic acid (ASA). A 0.5 ml solution of 0.5%, 1% and 2% carrageenan was administered intraplantarly in right hind paw of adult Swiss mice. ASA was administered in a single dose of 200 mg/kg 1 hour before intraplantar injection of carrageenan. Paw volume, IL-1beta and nitrite levels in plasma and paw infiltrate and the total and differential white blood cells count were determined. Carrageenan administration induced a dose-dependent increase in paw volume, IL-1beta level in paw infiltrate and nitrite content in plasma. ASA exhibited a better anti-inflammatory effect where 2% carrageenan was used as the inflammatory agent. Pre-treatment with ASA resulted in increase in plasma IL-1beta level, decrease in IL-1beta level at the inflammation site and restoring plasma nitrite concentration to its normal range. Our results stressed on the role of IL-1beta and NO in the acute inflammation and suggested that the dose of carrageenan is the major determinant in the response to ASA.