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The Aminoguanidine Reduced NO Synthase Activity and Infiltration of Macrophages in Inflammation Induced by LPS in Rats

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Abstract : Macrophages (Mo) play an essential role in host defense against pathogens. These inflammatory cells contain a large group of inducible enzymes such as NO synthase (NOS). This study was conducted to characterize experimentally induced inflammation in vivo by lipopolysaccharides (LPS). LPS is an essential component of the outer membrane of Gram-negative bacteria and a potent inducer of macrophage. Except control rats, all rats received different doses of LPS intra-peritoneally. The involvement of inducible NO synthase (iNOS) and constitutive (cNOS) in the modulation of the inflammatory response was studied by treating the rats with L-NAME (non-selective NOS inhibitor) or aminoguanidine (AG inhibitor of iNOS). Inhibitors were injected 24 hours before LPS administration. The results showed that esterase activity (a marker of macrophage infiltration) which is induced by LPS is reduced by AG, was potentiated by treatment with L-NAME in tissue homogenates of the liver, kidney and spleen. Meanwhile, the concentrations of nitric oxide (NO) induced by LPS were reduced with AG and are completely inhibited with L-NAME in the tissues studied. NO concentrations and plasma transaminase levels have undergone remarkable increases in rats treated with LPS alone. However, the AG significantly reduced these rates. Our results highlighted the role of NO synthase inhibitors in reducing of inflammatory responses that characterize many infectious diseases.

Keywords : aminoguanidine, esterase, LPS, L-NAME, macrophage, nitric oxide
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