

NovaMin (Bioglass) attenuates a proinflammatory response in mouse peritoneal endotoxiosis.

NovaMin Research Report

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SHOCK, Vol. 17, No. 2, pp. 135-138, 2002*

Abstract

Objective: The purpose of this series of animal studies was to determine if NovaMin (then called Bioglass®) was useful as an anti-inflammatory agent in local inflammatory processes. This is an important consideration in consideration of NovaMin as a potential anti-gingivitis active ingredient.

Summary: Three- to fifty-milligram doses of 5 μ NovaMin (Bioglass) were administered intraperitoneally in C57BL/6 mice, to evaluate the potential of the small particles to initiate an inflammatory effect. In addition, the authors conducted a second study whereby the peritoneal cavity was pre-exposed to NovaMin, and was then subjected to a subsequent endotoxin administration (at various time points), to evaluate its potential as an anti-inflammatory agent. In each experiment, total leukocyte, myeloperoxidase, and cytokine levels in the peritoneal wash fluid were determined.

In the initial study, all doses of NovaMin were found to induce a significant peritoneal IL-6 response; however, NovaMin did not induce a TNF- α , IL- α , IL-10, or a white cell recruitment into the peritoneal lavage fluid. The expression of IL-6, in the absence of the other inflammatory cytokines, is generally associated with an anti-inflammatory tissue response. There was no outward appearance of a pro-inflammatory response from the administration of the particles.

In the second experiment, pretreatment of the peritoneal cavity with NovaMin produced a transient reduction in the proinflammatory response to endotoxin. The investigators conclude that exposure to NovaMin produces an IL-6 response without concurrent expression of TNF- α or IL-1 α . NovaMin appears to transiently suppress the inflammatory response to endotoxin, possibly through the early induction of IL-6.

Conclusion: These findings suggest that NovaMin may offer a unique approach in modifying the inflammatory response in local tissue compartments.

Key Words: IL-6, TNF-alpha, inflammation, D-galactosamine, lipopolysaccharide, gingivitis