Myeloperoxidase-Deficient Mouse

Tech ID: 20085 / UC Case 1998-608-0

BACKGROUND

The Myeloperoxidase (MPO) enzyme aids in the defensive properties of phagocytic cells of the human immune response. Prevalent in neutrophils and monocytes/macrophages, MPO generates a variety of oxidative processes which aid in the defensive mechanism of the host. Due to the fact that these cells are usually the primary responders to a diseased state, their defensive enzymes are often non-specific. In turn, the oxidative enzymes generated by MPO, may potentially play a role in the disease processes.

INNOVATION

To study the role of MPO in the host defense and disease pathology, UCLA scientists have developed a strain of MPO-deficient mice. During an inflammatory response, phagocytic cells release MPO as a mechanism of defense. Studies have shown that MPO-deficient cells are more susceptible to disease. It is the oxidative properties generated by the enzyme that are effective in damaging proteins, lipids and DNA from a variety of pathogens. However, this process indiscriminately causes the destruction of the very tissue it aims to maintain. Thus, MPO has been proposed as the candidate enzyme for leukocyte mediated tissue damage. In turn, this paradoxical approach has led scientist to the hypothesis that MPO may very well play a role in disease pathology. By studying mice that do not express MPO, the role of the oxidants generated by the enzyme can be determined. Recent evidence has indicated there are correlations between levels of MPO and several disease states. Although no definitive associations have been made, high levels of MPO are seen in atherosclerotic aortae and multiple sclerosis brain lesions. Applications of the MPO-deficient mice in such studies, may provide critical relationship between the two. Moreover, with further research they may also become a useful tool in the development of drugs or other therapies for disease.

OTHER INFORMATION

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Development Of A Method For Endocrine Network Discovery Uncovers Peptide Therapeutic Targets
- AGPAT5 as a Molecular Mediator of Insulin Resistance

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OTHER INFORMATION

KEYWORDS

research technologies, immunity, knockout mouse, model

CATEGORIZED AS

- **Medical**
  - Disease: Autoimmune and Inflammation
  - Disease: Cardiovascular and Circulatory System
- **Research Tools**
  - Animal Models

RELATED CASES

1998-608-0

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