

Therapeutic Potential of N-Acetylcysteine for Wound Healing, Acute Bronchiolitis, and Congenital Heart Defects

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ABSTRACT

Background: Wound healing is a composite and vital process in which devitalized tissue layers and cellular structures repair themselves. Bronchiolitis is generally prompted by respiratory syncytial virus or human metapneumovirus; this condition is an acute inflammatory injury of bronchioles. Heart problems that develop before birth are known as congenital heart defects (CHDs), and pregestational diabetes is considered a major predisposing factor of CHDs. N-Acetylcysteine (NAC) is a transformed kind of amino acid cysteine which restores the intracellular levels of the natural antioxidant glutathione when taken internally, thereby assisting the cells' ability to diminish the damaging effects of reactive oxygen species (ROS). Objective: In the present communication, NAC's therapeutic potential for wound healing, acute bronchiolitis, and congenital heart defects (CHDs) is critically analyzed by reviewing its effect on the various targets of these diseases. The multifunctional nature of NAC is outlined in a review of evidence from in vitro and in vivo studies. Conclusion: In conclusion, NAC could be used as a therapeutic agent in the treatment of wound healing, acute bronchiolitis and congenital heart defects (CHDs). The focus of future research should be the following; (1) to examine NAC clinically to be considered in the treatment of wound healing; (2) to investigate whether NAC could be used alone or with insulin to prevent CHDs in infants with pregestational diabetes; (3) to evaluate the application of NAC as a potential agent for PAH treatment.

KEYWORDS: Acute bronchiolitis, congenital heart defects, mechanism, N-acetylcysteine, therapy, wound healing.

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