

COMPARATIVE STUDY OF PROTECTIVE EFFECT OF OLIVE OIL WITH OR WITHOUT GENTAMICIN ON E COLI-INDUCED LUNG SEPSIS IN ADULT MALE ALBINO RAT

Abstract:

Sepsis is frequently the cause of severe pulmonary dysfunction. Gentamicin is used clinically due to its wide spectrum of activities against infections; however it has serious adverse effects and life-threatening toxicity. The challenge for scientists is to develop alternative therapy or protective agents against its toxicity. Hence the present study is an attempt to elucidate the possible protective role of virgin olive oil with or without gentamicin against the toxic changes on the lung induced by sepsis. Thirty six adult male albino rats were used and divided into three groups. Group I: served as the control group, Group II: lung sepsis was induced by intraperitoneal injection of E. coli LPS serotype O127 : B8 and Group III: lung sepsis was induced as in group II then divided randomly into 3 subgroups. Subgroup IIIa: animals were injected with gentamicin, Subgroup IIIb: animals were injected with gentamicin and given virgin olive oil and Subgroup IIIc: animals were given virgin olive oil only. During the experiment the body weight and hemodynamic parameters were monitored. At the end of the experiment the lungs were excised out and processed. Histological and immunohistochemical studies of lung sepsis showed an alteration in the lung architecture in the form of overexpansion of alveoli alternating with collapse of others. Pneumocytes II showed destruction of lamellar bodies and were predominant replacing pneumocytes type I in the alveolar lining with increase in HSP70 expression, significant decrease in body weight and blood pressure with tachycardia. Gentamicin- treated group revealed minimal improvement in lung tissue. While concomitant administration of virgin olive oil along with gentamicin showed a noticeable improvement in lung architecture and increase in HSP70 expression with significant improvement of body weight and blood pressure. However animals given virgin olive oil only revealed the most favorable results with remarkable improvement of lung architecture. In conclusion, based on the previous findings, gentamicin and olive oil prevents the deleterious effects of lung sepsis. Moreover, virgin olive oil solely has succeeded to improve the septic effects on lung by enhancing anti-oxidant defense system and suppression of oxidative stress.

Key words: Olive oil, Gentamicin, Lung sepsis, HSP70