**Abstract**—Studies show that inhalation of oil gas vapor may impose serious health risks for individuals exposed to such vapor. The main aim of this study was to determine the effects of diesel oil vapor inhalation on SGOT and SGPT as indices of liver function. Male Wistar rats were randomly divided into control animals, and rats that exposed to diesel oil vapor for 1 hour/day, for 2 hours/day and for 3 hours/day. After a period of 6 weeks, blood samples were collected and level of SGOT and SGPT was measured by spectrophotometry method. Data were statistically analyzed and compared between groups using ANOVA. Our findings indicated that SGOT was non-significantly decreased in rats exposed to diesel oil vapor compared with control animals. Our finding indicates that exposure to diesel oil vapor can bring about decreased SGPT level, indicating the health risk caused by exposure to diesel oil inhalation, in particular, to liver.

**Keyword**— Diesel oil, Health Risk, Liver, Rat.

I. INTRODUCTION

**Diesel oil** is a fuel obtained from petroleum distillation that is used in diesel engines. Diesel fuel is a mixture of hydrocarbons obtained by distillation of crude oil [1]. Diesel fuel specifications differ for various fuel grades and in different countries. Diesel fuel contains toxic constituents, including benzene, toluene, ethylbenzene, and xylenes (collectively known as “BTEX” compounds). The Department of Health and Human Services, the International Agency for Research on Cancer, and EPA have determined that benzene is a human carcinogen.[2] Chronic exposure to toluene, ethylbenzene, or xylenes also can damage the central nervous system, liver, and kidneys.[3] Diesel vapors and also gasoline vapor can irritate eyes, nose, throat and lungs. Excessive short-term exposure can lead to dizziness, drowsiness, loss of coordination, blood pressure elevation, headaches, nausea, asphyxiation and lung damage. Breathing diesel vapors for long periods of time can cause kidney damage and reduce the clotting ability of blood [4]-[7]. Neurotoxic effects of fume oil inhalation has been also established [8]. Traffic congestion increases vehicle emissions and degrades ambient air quality, and recent studies have shown excess morbidity and mortality for drivers, commuters and individuals living near major roadways [9].

Serum glutamic oxaloacetic transaminase (SGOT), is an enzyme is found in the liver, heart, skeletal muscle, kidneys, brain, and red blood cells, and it is commonly measured clinically as a marker for liver health. Serum glutamic pyruvic transaminase (SGPT) is found in serum and in various bodily tissues, but is most commonly associated with the liver [10]. Alteration in SGOT or SGPT levels is prevalent in various conditions including liver damages [11].

This study was designed to evaluate the effects of diesel oil vapour inhalation on SGOT and SGPT levels as indices of liver function.

II. MATERIAL AND METHODS

A. Animals

Adult Wistar rats weighting 200±30g were purchased and raised in our colony from an original stock of Pasteur institute (Tehran, Iran). The temperature was at 23±2°C and animals kept under a schedule of 12h light:12h darkness (light on at: 08:00 a.m.) with free access to water and standard laboratory chow.

B. Protocol of Study

Male Wistar rats were randomly divided into control animals, and rats that exposed to diesel oil vapor for 1 hour/day, for 2 hours/day and for 3 hours/day. After a period of 6 weeks, blood samples were collected in appropriate tubes by cardiac puncture technique 24h after the last treatment. After collection, the blood samples left to clot at room temperature for 15 minutes and then centrifuged at 2500 r.p.m for 15 minutes. The serum layer was then separated and aliquoted into small test tubes and stored at -20°C until enzyme activity determination. SGOT and SGPT levels were measured by spectrophotometry method. All animal experiments were carried out in accordance with the guidelines of Institutional Animal Ethics Committee.

C. Statistical Analysis

All values are presented as mean ± S.E.M. Statistical significance was evaluated by one-way analysis of variance.
The impacts of fume oil. Air pollution and health risks due to vehicle refueling emissions brought about serious toxic risks [12].

We have shown that exposure to diesel oil vapor can bring about enhanced SGOT level, indicating the health risk, in particular to liver, caused by exposure to diesel oil inhalation.

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REFERENCES


