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## Brief Report

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# Presence of Lead in Opium

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Opium addiction is a common form of addiction in Middle East countries such as Iran. Recently several reports suggested some kinds of pathologic findings such as abdominal pain, nephropathy, and anemia in opium addict patients. Such pathologic findings suggest lead poisoning in the patients. In this study, the concentration of lead in 10 opium samples was evaluated. The mean concentration of lead in the opium samples was 1.88 ppm. This may explain some of the pathologic findings found in addict patients. The authors would suggest further investigations to evaluate the lead concentration in opium addicts' sera and also routine screening for lead poisoning in opium addict patients.

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**Keywords:** Atomic absorption • lead • opium

### Introduction

Middle East is the main way of opium transit. Opium addiction is one of the most prevalent forms of addiction in Middle East countries such as Iran.<sup>1,2</sup>

There are several reports that suggest pathologic findings such as abdominal pain, anemia, and nephropathy in opium addict patients.<sup>3-5</sup>

Previously a report from Iran suggested the presence of lead in opium and introduced it as an opium adulterate. This can explain the above pathologic findings.<sup>5</sup>

In this study, we investigated the presence and the concentration of lead in samples of opium in Kerman Province, southeast Iran.

### Materials and Methods

#### Samples

During autumn 2006, ten samples of opium

were selected randomly from the opium seized by Police Department in Kerman Province.

#### Lead concentration analysis

The samples were burnt in electric burner at 700°C for 30 minutes and afterwards they were dissolved in a solution of nitric acid/water (1:1). After one day, 0.1 ppm ethylenediamine tetraacetic acid (EDTA) was added to each solution for eliminating probable interferences. The solutions were warmed, filtered, and prepared for analysis. The atomic absorption measurements were performed using a Shimadzu AA670 atomic absorption spectrometer (Shimadzu, Japan). The Pb 217 nm analytical line with 0.3 nm slit in air acetylene flame was employed throughout the work. The sensitivity of the spectrometer was 0.1 to 0.4 µg/mL with a detection limit of 0.03 µg/mL. The scope of analytical concentrations was 0.1 to 25 µg/mL.<sup>6,7</sup>

### Results

The mean concentration of lead in the samples ± standard error of mean (SEM) was 1.88±0.35 ppm. The minimum and maximum concentration of lead in the samples was 0.7308 ppm and 3.5255 ppm, respectively.

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## Discussion

The most prevalent form of opium consumption in Iran is inhalation. Some studies suggested that lead absorbed by inhalation had a much greater bioavailability.<sup>8</sup> It must be noted that WHO recommended that a person with a body weight of 68 kg can intake 240 µg lead/day as Tolerable Daily Intake (TDI).<sup>9</sup> Recent data show that if an addict consumes approximately 30 g of opium daily (some addicts consume up to 100 g/day),<sup>10</sup> he/she will receive at least 20% of TDI.<sup>11</sup> However, it appears that the presence of such lead concentrations in opium is noticeable and it might be harmful in chronic consumption by addicts.

Our findings confirm the hypothesis of presence of lead in opium. It is still unknown whether it is added to it during the process of opium preparation or it is added to increase the opium weight during opium trading. So, it is suggested to determine the concentration of lead in other opium samples for a better evaluation.

In conclusion, it is recommended to evaluate the concentration of lead in the sera of opium addicts, and if its concentration is high, routine screening for lead poisoning should be performed in all opium addict patients.

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