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## Component analysis of illegal herbal medicines used for substance use treatment in Tehran, Iran

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**Background & Objective:** Many substance users use herbal medicines to stop their addiction. However, these medicines are usually produced in a non-standard way, using different materials, some of which contain illicit substances. So, this study aimed at analyzing the components of herbal medicines, which are used for substance abuse treatment.

**Methods:** This study was conducted in Tehran, Iran in 2015. We recruited a number of previously addicted people who stopped substance abuse; they were referred to herb sellers working in each of the 22 districts of Tehran to buy herbal capsules or tablets for substance abuse treatment. Overall, we collected a total of 95 samples and sent them to a laboratory. The samples were tested for the presence of opioids, amphetamines, benzodiazepines, tramadol, codeine and other components. The collected data were analyzed using HPLC method.

**Results:** A total of 23 samples (24%) were in the form of tablets, with pressed external coverage, in different colors, and weighing between 1.75 and 2.5 mg; these tablets were known as dragon tablet. The other 72 samples (76%) were in the form of capsules filled with colored powders, weighing between 1.5 and 2.5 mg; they were known as the hand-made drug withdrawal capsules. The most common ingredients in all the samples, respectively, were as follows: diphenoxylate (95%), tramadol (87%), morphine (83%), codeine (72%), and acetaminophen (71%). Other components found in the samples were benzodiazepines (23%), phenobarbital (22%), methamphetamines (19%), cannabis (17%), amphetamines (11%) methadone (6%), and tricyclic antidepressants (3%). The most common ingredients in dragon tablets, respectively, were tramadol, diphenoxylate, morphine, codeine, and acetaminophen. The most common ingredients in hand-made capsules were diphenoxylate, tramadol, morphine, codeine, and acetaminophen, respectively. A comparison between hand-made capsules and dragon tablets showed that the dragon tablets did not contain methadone; on the other hand, phenobarbital, methamphetamine, and amphetamine were found to have a higher dose of methadone. However, most of the hand-made capsules contained diphenoxylate, morphine, codeine, acetaminophen, benzodiazepines, and methadone. Concerning the number of substances in the samples, an average of five substances was present in each of the analyzed samples, and 66% of the samples contained five or more substances. Moreover, 42 samples (44% of total samples) contained the five main substances (including morphine, codeine, tramadol, diphenoxylate, and acetaminophen).

**Conclusion:** The findings of the present study showed that the herbal capsules and tablets used for substance abuse treatment contained varying amounts of illegal substances; hence they could cause some problems for substance abusers who seek for treatment using this type of medications. Therefore, it is necessary for health policy makers to prevent the sale of such materials and have more supervision over herb sellers.

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