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Monitoring the Hypnotic Effects of Active Ingredients in Cold Medicines Using Focus Tests on Driving Simulators and Determining Chlorpheniramine and Diphenhydramine Concentrations in Biological Samples

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ABSTRACT

Introduction: Recently, the rate of traffic accidents has increased sharply. One of the most important factors contributing to these accidents is the use of drugs by individuals prior to driving. Diphenhydramine and chlorpheniramine, commonly found in over-the-counter cold medications, can heighten the risk of accidents due to their sedative effects. The goal of this study is to evaluate the sedative effects. The objective of this study is to assess the sedative effects of diphenhydramine and chlorpheniramine using a driving simulator.

Methods and Materials: Twenty volunteers participated in the driving simulator test three times. One of the stages involved the consumption of a product containing 25 mg of diphenhydramine, another stage involved the consumption of a product containing 2 mg of chlorpheniramine, and the final stage involved the use of a placebo. Blood sampling were collected prior to the test, and the data obtained from these samples were analyzed using chromatography.

Results: The results indicated that the sedative effects of diphenhydramine and chlorpheniramine do not lead to significant differences in most parameters, such as maximum driving speed. The only parameters on which the effects of the drug were significant were the impact of chlorpheniramine on lane departure throughout the entire length of the road and in the rural environment and the standard deviation of lateral position in rural environments, as well as the standard deviation of lateral position in the rural road section. Diphenhydramine did not produce significant changes in any of the examined parameters.

Conclusion and Discussion: The results indicated that the consumption of diphenhydramine does not significantly affect participants' driving performance compared to a placebo. In contrast, chlorpheniramine had a significant impact on participants' driving abilities. Chlorpheniramine is an active ingredient commonly found in various cold medications. Given the potential effects of this compound on concentration and driving activities, it is essential for physicians and pharmacists to adequately inform patients.

Keywords: Chlorpheniramine, Diphenhydramine, Traffic accidents

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