



K58 Sleeping With the Enemy: Zolpidem in Driving Under the Influence (DUI) and Postmortem Cases

Charlotte A. Baker, PhD, 1885 Old Spanish Trail, Houston, TX 77584*

After attending this presentation, attendees will better understand the pharmacokinetic properties that contribute to the therapeutic benefits of zolpidem (Ambien®), the toxicological findings in blood specimens, and zolpidem's potential impact on DUI and medicolegal investigations encountered by the Harris County Institute of Forensic Sciences. In addition to the reported findings and influence of zolpidem use in Harris County, its prevalence in the mainstream media will also be discussed.

This presentation will impact the forensic science community by describing the mechanistic properties, therapeutic benefits, and Food and Drug Administration (FDA) -established regimen guidelines of zolpidem, as well as disclosing the potentially deleterious effects of improper usage as determined by toxicological findings from casework investigations.

Zolpidem was approved by the FDA in 1992 and has become a common drug to aid with insomnia but it has recently gained attention for potential dangerous side effects of sleep walking, abnormal thinking, sleep driving, and residual effects into the morning. Zolpidem is a short-acting sedative-hypnotic prescribed for the short-term treatment of insomnia and works by activating the neurotransmitter GABA by a mechanistically similar manner as the benzodiazepines such as Xanax® and Valium®. It is typically prescribed as 5mg or 10mg capsules for immediate release and 6.25mg to 12.5mg for extended-release products (Ambien® CR). This medication is known to contribute to sleepiness the day after ingestion and is dependent on drug dose and individual characteristics. Therefore, it is recommended that the patient has at least eight hours of sleep to ensure that the drug is fully metabolized due to morning impairment. To further address the concern, the United States Food and Drug Administration approved a dose reduction in 2013, reducing the recommended dose of long-lasting impairment from 10mg to 5mg, depending on each individual.

Zolpidem has been depicted as a controversial sleeping aid since its long-lasting effects on patients have surfaced revealing abnormal behaviors due to its consumption. Previously, these abnormal behaviors were attributed to the combination effects with alcohol; however, there has been a growing revelation that these behaviors are induced with just zolpidem taken alone. Furthermore, there has been a growing concern on the evaluation of driving impairment with the use of zolpidem and motor vehicle accidents due to the increase of drugged driving cases. Finally, there has also been a significant increase in deaths from ingesting zolpidem in combination with other drugs and/or ethanol.

Harris County has received 136 cases from 2012-2014 that were positive for zolpidem. Several cases will be discussed related to zolpidem in DUIs and deaths that have resulted, including cases that have been highlighted in the media, as well as cases analyzed by the Harris County Toxicology Laboratory. In this presentation, several cases will be discussed related to DUI and postmortem cases.

Case 1: A 26-year old Asian male was driving under the influence. Upon analysis, zolpidem was found in the blood at a concentration of 1.0mg/L.

Case 2: A 63-year-old White male was driving under the influence with a blood level of 0.99mg/L for zolpidem. Ethanol was also detected at 0.01g/100mL which is below the level of impairment. Although norcarboxytetrahydrocannabinol was detected at 16ug/L, (the inactive metabolite of THC) it is not considered to have contributed to any level of impairment.

Case 3: A 54-year-old Black male was found dead in his home, apparently the victim of a suicide. Zolpidem was analyzed at a concentration of 1.4mg/L. Tramadol and desmethyltramadol were found in his blood sample at concentration levels of 17mg/L and 0.54mg/L, respectively.

Other cases that have gained national media attention will also be presented.

Zolpidem, DUI, Postmortem