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56. Clinical Correlates of Confirmed Benzodiazepine and Opioid Co-Exposures Among Patients Presenting to the Emergency Department

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Background: A recent social media trend demonstrated direct application of various energy drinks resulted in positive immunoassay (IA) results. Immunoassay interpretation is fraught with false positive results due to the non-specific nature of IA testing.

Methods: Commercially available IA testing kits (Prime Screen[®] 12 panel) were obtained. The top five energy drinks in the United States based on sales reports from 2022 were selected for testing. Samples of Red Bull[®], Monster Energy[®], VPX Bang[®], Rockstar[®], and Reign[®] were added to the designated “fill line” within each cup. Results for IA testing of amphetamines, barbiturates, buprenorphine, cocaine, methamphetamine, MDMA, morphine/opiates, methadone, oxycodone, phencyclidine, and cannabinoids were visually determined based on colorimetric results per the immunoassay packaging label. Outcomes included negative, positive, and invalid test. Three cans of each energy drink brand were analyzed in individual test cups. Samples from the first cans of each drink were analyzed by LC-MS/MS for confirmatory testing. Drug concentration cutoffs were provided by Prime Screen[®] packaging and institutional lab catalog respectively.

Results: Benzodiazepine immunoassays were positive in 9/15 samples including 3/3 Red Bull samples, 2/3 Monster Energy samples, 2/3 Bang samples, 2/3 Rockstar samples (and "invalid" one Rockstar sample). MDMA immunoassays were positive in 5/15 samples including 2/3 Bang samples, 2/3 Rock Star samples, and 1/3 Monster Energy samples. Amphetamine immunoassays were positive in 3/15 samples including 2/3 Rockstar samples and 1/3 Bang samples. Methamphetamine and oxycodone immunoassays were each positive in 1/3 Rockstar samples. Reign was negative on all immunoassays. LC-MS/MS failed to confirm the presence of any substance indicated by immunoassay.

Conclusion: Immunoassay testing of five energy drink brands demonstrated 9/15 samples positive for benzodiazepines and 5/15 samples positive for MDMA; however, LC-MS/MS testing failed to confirm.