



ROHYPNOL®: A Review on Abuse as Date Rape Drug

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Abstract:

Date rape drug refers to a drug that can be used to assist in the execution of a sexual assault, such as date rape. Sexual assault is any type of sexual activity that a person does not agree to. Drugs used to facilitate rape may have sedative, hypnotic, dissociative and/or amnesiac effects, and can be added to a food or drink without the victim's knowledge. These drugs are powerful and dangerous. Date rape drugs are used on both males and females.

Rohypnol® is a brand name for flunitrazepam (a benzodiazepine), a very potent tranquilizer similar in nature to valium (diazepam), but many times stronger. The drug produces a sedative effect, amnesia, muscle relaxation, and a slowing of psychomotor responses. Sedation occurs 20-30 minutes after administration and lasts for several hours. Rohypnol® became (in) famous because it can cause memory "blackouts," periods of memory loss that follow ingestion of the drug with alcohol. It has short term as well as long terms effects. Rohypnol® overdose may result in excessive sedation, impairment of balance and speech, and may progress in severe overdoses to respiratory depression, coma, and possibly death. Laboratory identification of flunitrazepam is very difficult to achieve. There is only a 72 hour period of time to test for it before the drug is metabolized in the body. There are only insignificant traces after that time which is nearly impossible to detect.

Keywords: Flunitrazepam, Rohypnol, Date Rape Drug, Forensic Detection of Rohypnol.

Introduction:

The term "date rape drug" originated in American journalism in the 1990s, amid widespread reports that previously unknown herbs and pharmaceuticals were making sexual assaults easier and more frequent. Most Americans still use the term in that narrow sense, to refer to what they

consider "exotic" drugs, but alcohol and many other common substances can incapacitate a person and have been used in sexual assaults.

Date rape drugs also called as **CLUB DRUGS** are pharmacologically heterogeneous group of psychoactive drugs that tend to be abused by teens and young adults in bars, night clubs, concerts and parties.

There are few most commonly used drugs for date rape. They are-

1) Alcohol

It is the most commonly used date rape drug as it is most commonly available. Many assailants use alcohol because their victims willingly imbibe it, and can be encouraged to drink enough to lose inhibitions or consciousness.

2) GHB- gamma hydroxybutyric acid

It is colorless, odorless liquid that acts on the central nervous system as a depressant/ anesthesia. It has street names easy lay, liquid ecstasy, liquid x, clear x, liquid dream. It is not produced or manufactured by any pharmaceutical company; instead it is made in illegal drug labs or by amateur chemists at homes. It is easily made with commonly and readily available ingredients and novice chemistry skills. It takes 10-15 minutes after ingestion to show effects. The effect lasts for 3-6 hours when taken without alcohol & 36-72 hours when mixed with alcohol or other drugs. In very high dosages, unconsciousness, or even coma occur in 5 min. It exactly looks like water.

3) Benzodiazepines

Benzodiazepines are drugs used to treat anxiety, panic attacks, insomnia and several other conditions. Some benzodiazepines used to treat insomnia are powerful sedative, motor impairing, and strong amnesic properties. Flunitrazepam (rohypnol) is popularly held to be a date rape drug.

4) **Ketamine (ketamine hydrochloride)**

It's a legal drug sold as veterinary sedative or hospital grade anesthesia and goes by the brand name KETASET or KETALAR. It is the same family of drugs as PCP (phencyclidine). When used in human that drug acts as dissociative anesthesia. It renders the user fully aware of but uncomfortably detached from all body sensations. Its street names are special K, super K, OK, KO, kid rock.

ROHYPNOL®

Rohypnol® is a prescription drug– the only sedative that has been used in many “date rapes” in US. Rohypnol's medical use is a pre – operation anesthetic or strong sleeping pill, but stronger doses can bring on amnesia. It takes effect very quickly – sometimes as quick as 10 minutes after taken – and reaches its peak eight hours later when it can render a person totally unconscious.

Rohypnol® comes as a pill that dissolves in liquids. Some are round, small and white. Newer pills are oval and green-grey in colour. When slipped into a drink, a dye in these new pills makes clear liquids turn bright blue and the dark drinks turn cloudy. But this color change might be hard to see in a dark drink, like cola or dark beer, or in a dark room. Also the pills with no dye are available. These pills may be grounded up into a powder.

History - Swiss pharmaceutical company Hoffman-La Roche first described and developed benzodiazepines in 1950s. Roche modified the basic benzodiazepine structure and introduced a number of tranquilizers in 1960s and 1970s. Flunitrazepam was first synthesized by F. Hoffmann-La Roche & Co. in 1972. Fritz Hoffmann, born in Switzerland, was the founder of the pharmaceutical company. The company name was changed to F. Hoffmann-La Roche & Co. after Hoffman married his wife Adele La Roche; it was popular for married couples to hyphen their name. Some of the many street names of the drug are essentially named after Hoffmann's wife. Kurt Cobain overdosed on flunitrazepam and champagne a few weeks before his death.

Chemical Formula and Structure - Flunitrazepam has the formula: $C_{16}H_{12}FN_3O_3$ --- 5-(2-Fluorophenyl) 1,3-dihydro-1-methyl-7-nitro-

2H-1,4-benzodiazepin-2-one. It is a white solid, with a melting point of between 166-167 °C, a molecular weight of 313.3, and is soluble in ethanol.

Street Name - Circles, Forget Pill, LA Rochas, Lunch Money, Mexican Valium, Mind Erasers, Poor Man's Quaalude, Pingus, R-2, Rib, Roach, Roach-2, Roches, Roofies, Roopies, Rope, Rophies, Ruffies, Trip-and-Fall, Whiteys, Forget me drug, Reynolds, Rolpes, Reffies, Ruffles, Sedexes, wolfies.

Appearance and Properties - Rohypnol® comes as a pill that dissolves in liquids. Some are round, small and white. Newer pills are oval and green-grey in colour. When slipped into a drink, a dye in these new pills makes clear liquids turn bright blue and the dark drinks turn cloudy. But this color change might be hard to see in a dark drink, like cola or dark beer, or in a dark room. Also the pills with no dye are available. These pills may be grounded up into a powder. The drug also comes as small and white pill with a split –pill line on one side and the word “ROCHE” with the number 1 or 2 in a circle stamped on the other. They are quickly dissolved in liquid especially when crushed first. They come as a pill in 1-2 milligram doses. Rohypnol is colorless, odourless and tasteless so cannot be detected by the victim if mixed in their food or drink. This drug is shipped in bubble packaging or blister packs that appear very similar to aspirin.

Mode of Administration - The most common route of administration is oral. Users swallow or chew the tablets or allow them to dissolve under the tongue. The act of adding such substances to drinks is known as "drink spiking". They also crush pills and snort the powder to feel the effects more quickly, the powder can also sprinkled on marijuana and smoked or dissolved and injected. Users feel the effects 15-20 minutes after ingestion, and they may last for 12 or more hours.

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Effects of Rohypnol® -

Desired effects

There are few effects of Rohypnol® which are desired and for which purpose it is used. Desired effects include disinhibition, amnesia and muscle relaxation, but individual effects vary. The amnesia is anterograde, that is, it involves memory loss for events that occur after the medication is taken.

Adverse effects

The effects of rohypnol® can be felt within 30 minutes of being drugged and can last for several hours. If an individual is drugged, he/she might look and act like someone who is drunk. There can be a trouble in standing. The person's speech might be slurred. These effects can be short term or long term.

Short term effects can be as follows –

- Relaxation or sedation of the body.
- Vomiting and headache.
- Difficulty in breathing.
- Nausea.
- Rapid mood swings, outburst of temper.
- Stomach problems.
- Breathing and heart rate slow down to dangerous levels.
- Memory loss, dizziness and sleepiness.
- Coma and seizures.
- Death.

Long term effects can be –

General learning can be affected when sedatives like rohypnol® are taken for prolonged periods. Risk of becoming addicted increases with the dose and the duration. Users with the history of alcohol or drug abuse are at greater risk of dependence. Once physical dependence occurs, withdrawal symptoms will appear if rohypnol® use is ceased abruptly. It also causes tolerance and dependence when used regularly. Some danger signs to recognize the long term problems are that the individual-

- Uses it more frequently.
- Need more and more to get the same effect.

- Become preoccupied by using it.
- Spend more money than needed on the drug.
- Miss classes, fail to complete assignments or miss other obligations.
- Make new friends who do it and neglect old friends.
- Find it hard to be happy and relaxed without it.
- Have headache and trouble sleeping without it.

Overdose - Rohypnol® overdose may result in excessive sedation, impairment of balance and speech, and may progress in severe overdoses to respiratory depression, coma, and possibly death. The risk of rohypnol® overdose increases if the drug is taken in combination with central nervous system depressants such as alcohol and opiates. In a retrospective study of deaths, when benzodiazepines were implicated, the benzodiazepines, rohypnol and flunitrazepam were the most common benzodiazepines involved.

Withdrawal Symptoms - Cessation of rohypnol® use can result in benzodiazepine withdrawal syndrome. Gradual discontinuation may result in withdrawal symptoms including seizures, psychosis, severe insomnia, amnesia, loss of concentration, rebound insomnia, mood swings, depression and severe anxiety. Abrupt and rapid discontinuation may result in suicidal or homicidal ideations, mania, delirium, convulsions, violence, catatonia and coma. As withdrawal progresses patients often find that their physical and mental health improves with improved mood and improved cognition.

Forensic Detection of Rohypnol®

Laboratory identification of flunitrazepam is very difficult to achieve. There is only a 72 hour period of time to test for it before the drug is metabolized in the body. There are only insignificant traces after that time which is nearly impossible to detect. Rohypnol® is not detected with routine toxicological screening. After ingestion it can be found in the blood stream for 24 hours and in urine samples for 48 hours. A urine test can detect the presence of rohypnol® up to 60 hours after ingestion. Rohypnol® can be more difficult than

similar drugs because it is in low concentrations and is cleared quickly by the body. Antibody based (immunoassay) urine tests and blood tests are conducted to detect the drug. Rohypnol® and its active metabolite 7-amino-flunitrazepam may be detected by gas chromatography/mass spectrometry testing up. Hairs can also be used as a possible source of detection of flunitrazepam and its metabolites.

Rohypnol® Rapid Drug Test (Benzodiazepines Dip Test) - Rohypnol® Urine Drug test, a simple one step dip and read urine test card for detection of Benzodiazepines in urine. This test card detects presence of Rohypnol in urine.

Micro-Plate Enzyme Immunoassay- Micro-plate enzyme immunoassay method allows to detect flunitrazepam and related compounds in urine at least up to 5 days after administration of a single dose of Rohypnol® (like in drug-facilitated sexual assault scenarios). This significant increase in the detection time interval is possible if the enzymatic hydrolysis of urine and solid-phase extraction is applied. Micro-plate enzyme immunoassay should be used as a preliminary screening technique of urine in toxicological investigation of drug-facilitated sexual assault when use of benzodiazepines is expected.

Chemical Ionization Gas Chromatography-Mass Spectrometry - Application of solid-phase extraction and highly sensitive gas chromatography – mass spectrometry with negative ion monitoring chemical ionization allows detecting 7-aminoflunitrazepam, flunitrazepam major metabolite, in urine 14 days after administration of a single dose of Rohypnol®. The maximum concentration of 7-aminoflunitrazepam in urine was observed 6 to 24 hours after administration of a single dose of Rohypnol®. The concentrations of 7-aminoflunitrazepam in hair are much higher than concentrations of the parent drug, flunitrazepam. The metabolite remains in hair for at least one month after administration of a single dose of Rohypnol®. The new technology allows the detection of the other compounds such as diazepam, alprazolam, triazolam, and ketamine in hair in very low concentrations.

Conclusion:

Rave drugs, club drugs and some other easily available over the counter prescription drugs are a menace to the society. Incidences of date rape on a all time high. Some are reported and most of them are not. Date rape drugs are being abused very widely and hence, their use, other than for approved medical and/or research purposes should be completely banned. The chemical structures of these drugs are often modified to avoid the possible detection. But with the recent advances in the technologies, detection of a date rape drug such as Rohypnol® (Flunitrazepam) and its metabolites is possible in biological samples (bodily fluids and hairs) even in the smallest of concentrations.

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