

Use of pectin as a drug screen adulterant and its detection by Intect® 7

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AIM: Pectin, a heterosaccharide derived from the cell wall of plants, can be purchased from most U.S. supermarkets as a gelling agent for canning purpose. This study investigates its effectiveness as an adulterant for immunoassay drug screens and whether it can be detected by the adulterant test dipstick– Intect® 7.

METHODS: 100mg/ml solution of commercial fruit pectin (Sure Jell) solution was added to urine drug control (BioChemical Diagnostics) containing 3 times the cut-off concentrations (3X) of 10 abused drugs to obtain 5 mg/ml, 10 mg/ml and 20mg/ml of pectin. Each of these solutions was tested with the immunoassay drug screen FastTox® (Branan Medical Corp.) and the adulterant test strip Intect® 7 (Branan Medical Corp.)

RESULTS: Applying the 3X control to the FastTox® should produce all positive results in 10 tests. Any negative result with the control containing the pectin suggested pectin was an effective adulterant for that test.

Drug Test	Test cut-off in ng/ml	Pectin conc. in 3X control		
		5mg/ml	10mg/ml	20mg/ml
Cocaine	300	+	-	-
Opiates	300	+	-	-
Methamphetamine	500	+	+	-
THC	50	+	-	-
Amphetamine	1000	+	+	-
PCP	25	+	+	+
Benzodiazepines	300	+	-	-
Barbiturates	300	+	-	-
Methadone	300	+	+	-
Tricyclic Antidepressants	1000	+	-	-

TABLE 1: FastTox® Drug Screen results.

	5mg/ml	10mg/ml	20mg/ml
CR	100	100	100
NI	-	-	-
GLU	-	-	-
PH	8	8	3
SG	1.005	>1.020	>1.020
BL	-	-	-
PCC	-	-	-

TABLE 2: Intect® 7 results.

CONCLUSION: Pectin appears to be an effective adulterant for immunoassay drug screen. We speculate that its mechanism of action is due to the drug molecules being trapped in the three-dimensional pectin structure and thus become unavailable to the antibody in the immunoassay system. This adulterant can be detectable with the Intect® 7 adulterant dipstick since it gives abnormal reading on the specific gravity pad and at higher concentrations on the pH pad.

KEYWORDS: *Adulteration, Intect® 7, Pectin, Drug screen, Drugs of abuse*

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