HONEY NITROFURAN METABOLITES (4) DETECTED IN 50 MIN.

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INTRODUCTION

Honey is tested for the detection of the protein-bound metabolites of furaltadone, furazolidone, nitrofurantoin and nitrofurazone. The nitrofuran drugs are rapidly metabolized, so detection of the illegal use of nitrofurans is performed by measuring the protein-bound metabolite. Current methods for detection of the protein-bound metabolite require a 16-hour hydrolysis and derivatization step of the R group for each nitrofuran, and a subsequent solvent extraction step before analysis.

A new screening method has been developed for the detection of a family of nitrofuran antibacterial drugs. An antibody has been developed that detects a common structure for the nitrofuran metabolite on the protein. The antibody is not sensitive to the parent compound or the R group of any of the nitrofuran drugs. The current format uses the Charm Rosa lateral flow strip technology with the expectation that the test can be adapted to the Charm II system.

Keywords: *Honey/Nitrofuran/Nitrofuran Metabolites/Antibiotic/Charm*

MATERIALS AND METHODS

Apparatus and Reagents: Charm ROSA incubator, ROSA Reader, reagent test kit (Charm Sciences, Lawrence MA, USA)

Procedure:

Dilute 10 grams honey.

Filter.

Dissolve precipitate.

Column purification.

Add buffer.

Pipette 0.3ml onto lateral flow strip.

Read result.

Total time: 50 minutes.

RESULTS AND DISCUSSION

Nine honey samples analyzed in various laboratories by LC/MS for nitrofuran metabolites were tested using the lateral flow strip (see Table 1.) Two confirmed

negatives showed 1% inhibition. Seven confirmed positives showed 22% inhibition on lateral flow for 0.8ppb to 49% inhibition for 11.5ppb. The Charm nitrofuran metabolite test detects the presence and sum of the 4 metabolites. There is no maximum level of tolerance for nitrofurans (EU Council Regulations No. 237790 July 22, 2003.) Thus any positive indicates a violation. This method is not subject to interference from extraneous semicarbazide.

TABLE 1:

Charm Method		LC/MS Method	
Sample#	% Inhibition	LC/MS Concentration	Metabolite Detected
1	22%	0.8 ng/g	Semi-Carbazide
2	30%	1 ng/g	NR
3	25%	1.3 ng/g	Semi-Carbazide
4	36%	3.7 ng/g	AOZ
5	24%	4.5 ng/g	NR
6	37%	6 ng/g	AOZ
7	49%	11.5 ng/g	NR
8	1%	0 ng/g	none
9	-1%	0 ng/g	none

NR=not reported

% inhibition is calculated (1-[strip reading sample/average negative strip reading N=2])