



# Biochemical Diagnostics, Inc.

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Dear Sir or Madam

We are happy to report the results of several in-house and outside laboratory studies regarding the concentration of the sodium bisulfite solution used to activate the GV-65 cation exchange function.

We compared the standard (25%) solution with various dilutions down to 1% and with GV-65C columns pretreated with sodium bisulfite.

Drugs studied included:

1. Amphetamines
2. Benzoyllecgonine
3. Codeine
4. Morphine
5. PCP
6. THC-COOH
7. Benzodiazepines

We think the chemical diversity of this group is representative of the drugs encountered by DOA testing laboratories. It is, however, good laboratory practice for each laboratory to study its own group of drugs.

We wanted to test the cation exchange capacity as well as the non-ionic binding sites that would bind neutral and acid drugs such as THC-COOH. For our in-house studies the opiates were tested at 3X the high opiate cutoff (2000 ng/mL). The remaining drugs were all tested at 3X cutoff.

Attachment "A" shows the results of one outside study. Other studies are ongoing and will be available upon request.

The final bisulfite solution chosen is 5% w/v. We found that a 1% solution gave somewhat inconsistent results and that 5% (which performed perfectly) would give a good safety margin against incomplete conversion of the cation exchange moiety.

The results of using a 5% solution was compared to the 25% solution and the GV-65C bisulfite treated columns. We are happy to report that the results were equivalent for all three variants.

We are also able to report that the THC-COOH extraction results were equivalent to that obtained using the standard non-ionic method.

In summary, we now recommend using a 5% w/v sodium bisulfite solution in place of the 25% solution for all basic compounds.

If there is enough demand we will add the GV-65C bisulfite pretreated columns to our Pricelist.

The use of this column would save a pipetting step, requiring only the methanol activation.

We appreciate your business and are always looking for ways to improve our productivity and test results.

Very truly yours,

BIOCHEMICAL DIAGNOSTICS, INC.

## THC

### Standard SOP

	Concentration	Target	Abundance
Low Control	5.6	5.2	14685
Calibrator	14.6	15.0	37722
Cutoff Control	20.7	19.8	54504

### GV-65C Columns

	Concentration	Target	Abundance
Low Control	5.4	5.2	10792
Calibrator	15.3	15.0	36606
Cutoff Control	20.9	19.8	51282

## BE

### Standard SOP

	Concentration	Target	Abundance
Low Control	57.6	60.0	5380
Calibrator	151.0	150.0	12645
Cutoff Control	174.7	180.0	18337

### 5% NaBisulfite in (1:1) DI:0.2M Phosphate Buffer pH 6

	Concentration	Target	Abundance
Low Control	57.0	60.0	5905
Calibrator	148.5	150.0	13593
Cutoff Control	172.6	180.0	17601

### GV-65C Columns

	Concentration	Target	Abundance
Low Control	58.0	60.0	5323
Calibrator	148.1	150.0	13067
Cutoff Control	179.1	180.0	15130

## OXAZEPAM

### Standard SOP

	Concentration	Target	Abundance
Low Control	130.8	120.0	18930
Calibrator	N/A	300.0	31701
Cutoff Control	411.5	380.0	48972

### GV-65C Columns

	Concentration	Target	Abundance
Low Control	130.5	120.0	13047
Calibrator	299.8	300.0	41551
Cutoff Control	410.2	380.0	50351

### 5% NaBisulfite in (1:1) DI:0.2M Phosphate Buffer pH6

	Conc,	Target	Abundance
Low Control	130.1	120.0	19595
Calibrator	300.1	300.0	54262
Cutoff Control	409.75	380.0	78746