Further evidence of in vitro production of endogenous GHB in urine samples

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To further evaluate and supplement previous studies that documented in vitro production of gamma-hydroxybutyrate (GHB) in urine samples, we evaluated urine samples for in vitro production of GHB over a 6-month period. Specimens were provided by subjects who reported that they had never used GHB (n=31). The specimens were stored under standard conditions of refrigeration (5°C) without any preservatives added. All specimens were repeatedly analyzed for the presence of endogenous GHB over the 6-month period using a previously reported headspace GC-MS method.

Significant elevations in GHB were observed in many of the urine samples as storage time increased (Table 1). As a result, the in vitro production of GHB may increase the apparent GHB concentrations in urine during storage. This potential for an artificial increase in GHB concentration must be appreciated when establishing the threshold between endogenous and exogenous concentrations of GHB.

Sample #	1st Interval (days)	1st Conc (µg/mL)	% Change (60 days)	2nd Conc (µg/mL)	% Change (189 days)	3rd Conc (µg/mL)
1	18	0.24	+143%	0.58	+278%	0.91
2	18	0.12	+2195%	2.75	+2,919%	3.62
3	5	0.28	+188%	0.81	+370%	1.32
4	5	0.12	+56%	0.19	+195%	0.35
5	5	0.12	+225%	0.39	+782%	1.06
6	18	0.56	+784%	4.95	+1,377%	8.27
7	5	0.00	>257%	0.21	>501%	0.36
8	11	0.93	-25%	0.70	+9%	1.01
9	5	0.00	>234%	0.20	>653%	0.45
10	6	0.72	+284%	2.77	+632%	5.27
11	5	0.33	+182%	0.93	+406%	1.67
12	5	0.48	+217%	1.52	+568%	3.21
13	5	0.00	>230%	0.20	>526%	0.38
14	5	0.12	+96%	0.24	+170%	0.32
15	5	0.00	>249%	0.21	>522%	0.37
16	6	0.22	+127%	0.50	+386%	1.07
17	6	0.00	>239%	0.20	>448%	0.33
18	6	0.49	+123%	1.10	+341%	2.16
19	6	0.26	+132%	0.60	+264%	0.95
20	11	0.00	>2,973%	1.84	>5,750%	3.51
21	6	0.00	>100%	0.12	>215%	0.19
22	6	0.35	+240%	1.19	+563%	2.32
23	6	0.31	+133%	0.72	+240%	1.06
24	6	0.28	+138%	0.67	+323%	1.19
25	6	0.27	+181%	0.76	+480%	1.57
26	5	0.20	+353%	0.91	+886%	1.97
27	5	0.00	>100%	0.12	>366%	0.28
28	25	0.34	+150%	0.85	+314%	1.41
29	6	0.00	>221%	0.19	>473%	0.34
30	6	0.59	+198%	1.76	+212%	1.84
31	11	0.35	+171%	0.95	+345%	1.56

TABLE 1: *Changes in GHB concentration in urine samples stored up to 189 days.*

KEYWORDS: *GHB, Endogenous concentrations, In vitro production*

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