

# Stability of Tetrahydrocannabinol (THC) in Oral Fluid over a nine month period

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## Abstract

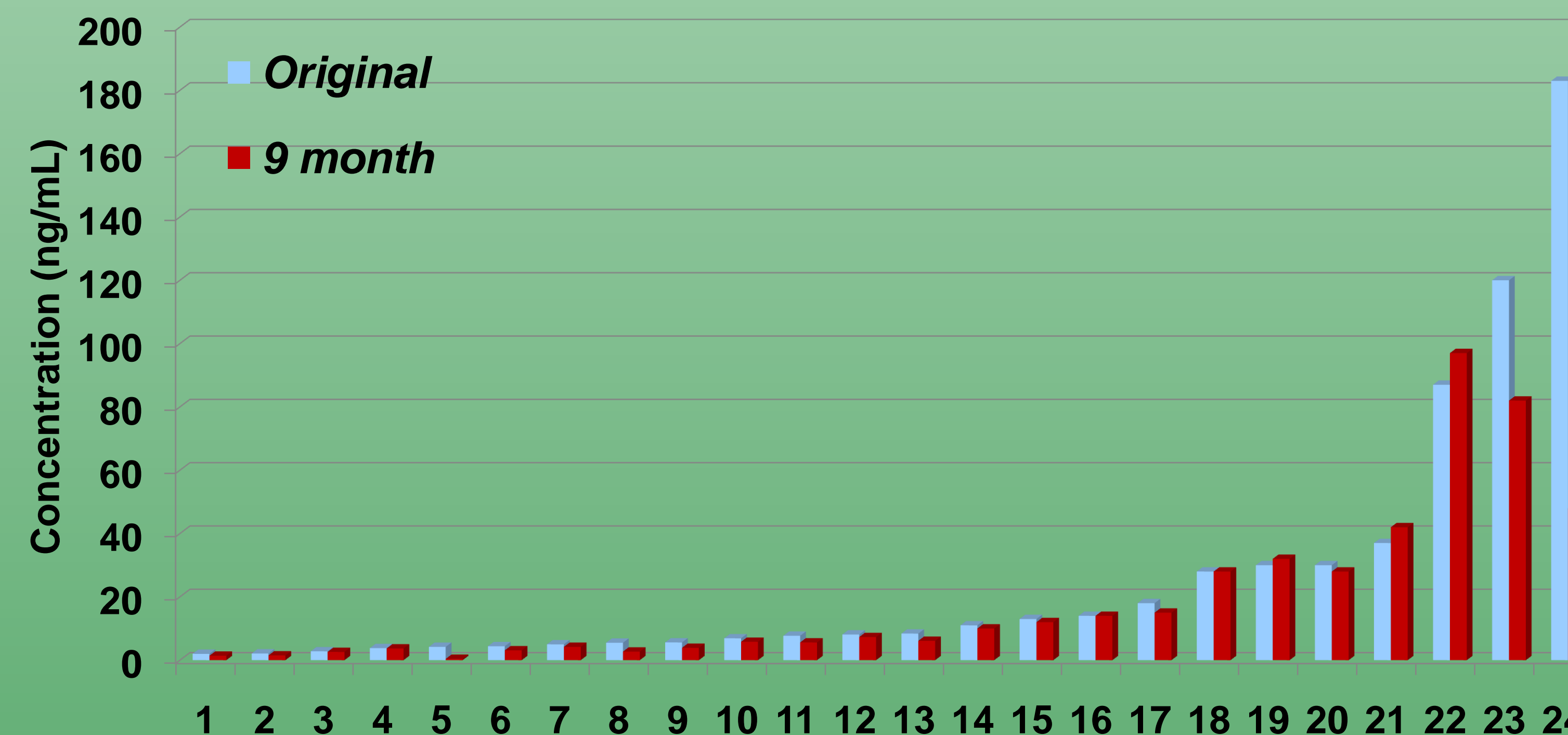
**Background:** Oral fluid is a useful biological specimen to detect recent usage of drugs and has specific advantages over urinalysis. However, the stability of drugs of abuse in the oral fluid/buffer matrix has not been widely studied.

**Sample Collection:** In order to assess the epidemiology of alcohol and drug use in a college bar district located in the state of Florida, self-report and biological data were collected from randomly selected and self-selected patrons exiting bars to examine associations between alcohol intoxication level, concomitant drug use, intent to drive a motor vehicle within an hour of study participation, and related behaviors. The protocol was completely anonymous and approved by a University of Florida IRB. Participants provided verbal informed consent. Data were collected from 10:00 p.m. to 2:30 a.m. on four nights in July/August 2007. The participants in the study were mostly men (64.7%) and Caucasian (78.4%) with a reported mean age of 21.9y. To examine drug use, oral fluid specimens were taken using the Quantisal™ collection device, which provides 1mL of neat saliva diluted with transportation buffer (3mL). Specimens were shipped overnight to Immunoanalysis for testing. Following ELISA screening and confirmation of positives with GC/MS, the specimens were stored at -20°C. Nine months later they were re-tested.

## Data Comparison

THC in oral fluid concentration (ng/mL)			
Sample ID	Original	9 month	%loss/gain
1	2	1.4	-30.00
2	2.1	1.5	-28.57
3	2.8	2.6	-7.14
4	3.8	3.7	-2.63
5	4.2	0.4	-90.48
6	4.4	3.1	-29.55
7	5	4.2	-16.00
8	5.5	2.7	-50.91
9	5.6	3.9	-30.36
10	6.9	5.8	-15.94
11	7.7	5.6	-27.27
12	8.1	7.3	-9.88
13	8.4	6.1	-27.38
14	11	10	-9.09
15	13	12	-7.69
16	14	14	0.00
17	18	15	-16.67
18	28	28	0.00
19	30	32	6.67
20	30	28	-6.67
21	37	42	13.51
22	87	97	11.49
23	120	82	-31.67
24	183	48	-73.77
		<b>Mean</b>	-28.16
		<b>STDEV</b>	22.62

## Stability of THC in Quantisal™



## Results and Discussion

Of 456 specimens, thirty-two (7%) were positive for THC; of these, 24 had adequate volume remaining for re-testing. Overall, drug loss for THC varied. Three specimens showed significant loss, (>50%) decreasing from 183 to 48ng/mL in one case; 4.2ng/mL to less than 1ng/mL in the second and 5.5ng/mL to 2.7ng/mL in the third. All other concentrations were within 32% of the original result.

Assessing those as outliers, the mean loss of THC over 9 months was 14.4%. Specimens which appeared to increase slightly in concentration may be accounted for due to analytical variability.

## Summary

*THC in the Quantisal™ oral fluid collection device showed an average decline of 14.4% over the storage period, with some specimens dropping significantly, and others showing no loss at all.*