



# TENNESSEE BUREAU OF INVESTIGATION

## Forensic Services Division

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### Forensic Chemistry Standard Operating Procedure Manual

#### Khat

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## 28.0 KHAT

### 28.1 Background

Khat (*Catha edulis*) is a flowering evergreen shrub native to Eastern Africa and the Arabian Peninsula. Khat is mainly sold as bundles of the leaves, twigs, and shoots of the *Catha edulis* shrub wrapped in banana leaves, paper towels, or plastic bags, and tied with husk-like strips. The fresh material is typically chewed and held in the cheek, but the freeze-dried material can be smoked, sprinkled on food, or made into a tea or paste.

Khat contains two controlled psychostimulants, cathinone and cathine, which are similar to amphetamine. Cathine is also known as d-norpseudoephedrine. These compounds produce stimulant effects with cathinone being much more potent than cathine. Because cathinone converts to cathine as the moist leaves age, fresh khat submissions should be refrigerated or frozen at the time of submission and extracted as soon as possible. Cathinone does not appear to convert in freeze-dried Khat (graba). No special storage precautions are required for these samples.

### 28.2 Testing Procedures

Freeze-dried samples may be extracted by using a basic into  $\text{CHCl}_3$  extraction.

The extraction procedure for fresh samples is as follows:

- Use approximately 10 grams of plant sample.
- Vortex the plant sample in 0.1 N HCl.
- Filter and make basic with NaOH.
- Extract into  $\text{CHCl}_3$  and dry down to a small aliquot and run on instrumentation.

No useful data has been obtained through color tests or UV spectroscopy.

A GC retention time of the extract may be performed and the retention times compared with a standard of cathine and cathinone. GC analysis is not necessary if the compounds are detected by both GC-MS and GC-IR.

GC-MS and GC-IR can be used to confirm the presence of cathinone and/or cathine.

### 28.3 References

*Khat*, DEA Seminar, May 2008.

Lee, M.M., *The Identification of Cathinone in Khat (Catha edulis): A Time Study*. Journal of Forensic Sciences, Vol. 40, No. 1, January 1995, pp. 116-121.

Oregon State Police. *Controlled Substances Procedure Manual*. Revision 32. Jan, 11 2011.