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TREND OF KETUM USE IN KELANTAN

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KETUM PLANT: INTRO

Ketum (*Mitragyna speciosa*) is the tree indigenous to South East Asia which can grow up to 30 metres

Synonyms: biak-biak (Malaysia) and kratom (Thailand)

The leaf veins: red, green and white

About 40 alkaloids: Mitragynine (MG), 7-HydroxyMG, speciociliatine, and corynantheidine.

Traditionally, Consumed by and recreational/herbal drink like tea or smoked (rarely)used for energy booster and treat variety of diseases.



PREPARATION OF KETUM JUICE

The fresh ketum leaves are boiled with water in a pot.

Then, the preparation is left to brew at low heat (max: 4 hr).

It is stirred frequently (prevent the leaves get stuck on the surface and burn-will emit an unpleasant burnt taste).

When it has been brewed properly, it emits a strong odour.

The brewed ketum juice is left to cool before being packed into small plastic bags and sold for consumption.

The packets are also chilled with ice to enable it to last for about 3 days.



INTRO:PHARMACOLOGY

Generally, small dose effect acted as stimulant (like cocaine). While large dose shows analgesic properties and produces sedative effect like opiate (Tavakoli et al., 2017).

Consumed traditionally for energy booster, pain killer and treat variety of diseases.

Such as intestinal diseases, muscle pain, coughing and diarrhea (Malaysia, Thailand)

A few Studies suggest: as antipyretic, euphoric, antidepression



INTRO:TOXICOLOGY

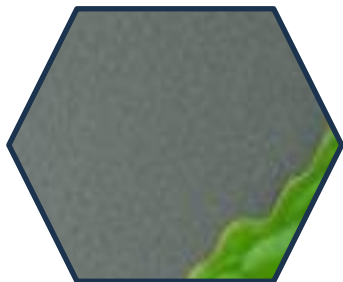
Low to moderate dosages (1–5 g):
Assist labourer to combat fatigue (light stimulant effect).

Moderate to high dosages (5–15 g):
use for controlling pain, diarrhea, and opioid withdrawal symptoms (opioid-like effects)

High doses (.15g):
Has stimulant effects, Some individuals may experience anxiety, irritability, and enhanced aggression due to stimulant effects,

Long-term, high-dose consumption relate to hyperpigmentation of the cheeks, tremor and anorexia (weight loss)

(Vicknasingam B e. al, 2010)



PROBLEM STATEMENT

The number of ketum drink seized by law enforcement in Malaysia increased significantly (UNODC,2020)

From 89,060.1 Litres (2017) to 101,516.7 liters (2019) (UNODC,2020).

Similar trend is seen in Kelantan (Table 1) shows number of weight and volume Ketum related samples received by JKM Kelantan



Year	Weight of sample (Tonnes)	Volume of Sample (L)
2018	8.1	3203
2019	15.6	3365
2020	16.9	7100

(Table 1) shows number of weight and volume Ketum related samples received by JKM Kelantan

PROBLEM STATEMENT

Worryingly, trends is changing, most ketum dependent more likely drink ketum cocktail (as recreational drink) to get more euphoria effect and caused less risk compare to other illegal drugs (Darshan et al., 2017).

Ketum cocktail drink:
Combination brewed ketum leaves (kratom juice), soft drink, cough syrup or other substances (Yaba, BZO) are added based on consumer preferences (Singh et al, 2017).

May lead to polydrug used among both young & older user as they tend to add other substances (Berita Harian, 2017, Likhitsathina et al., 2018)



AIM & OBJECTIVE

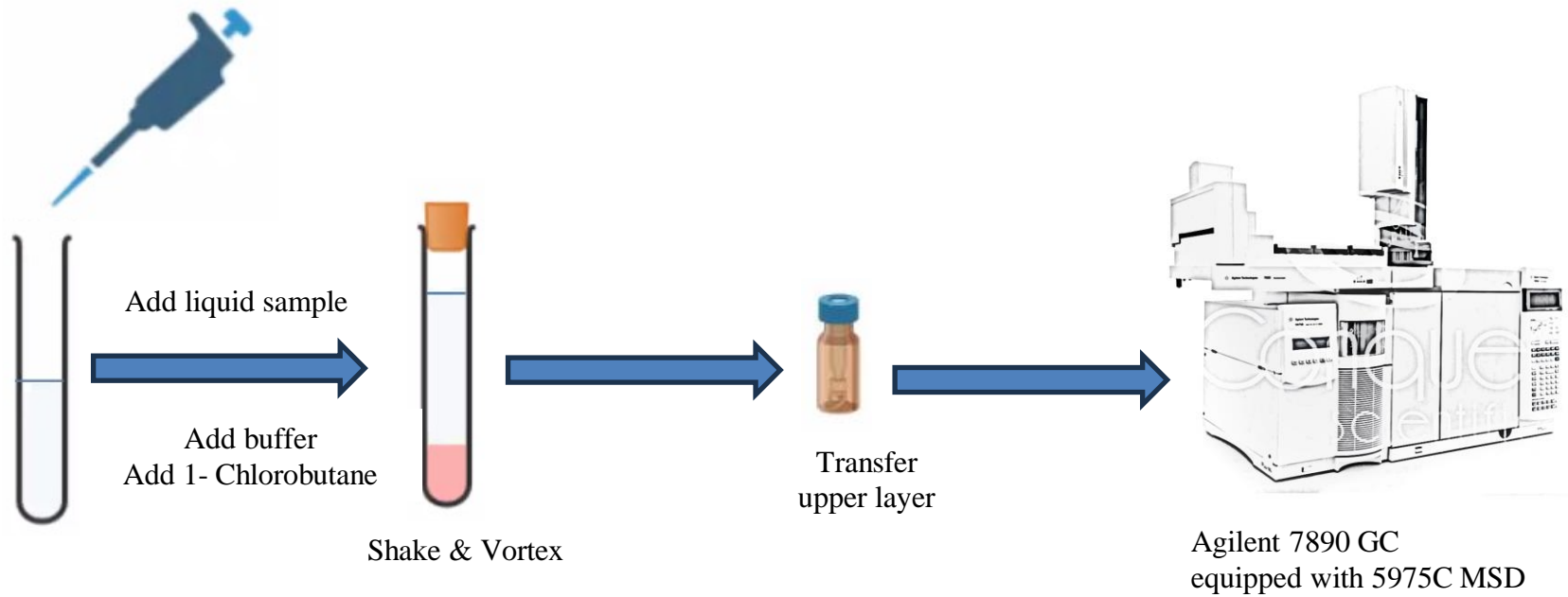
To study a method of analysis for detection mitragynine and other analytes of interest (this study- Meth, DPH, DIA, MG) in ketum drinks seizure in Kelantan.

SIGNIFANT OF STUDY

It is important to detect other controlled substance (this study- Meth, DPH, DIA, MG) in ketum cocktail drink because it would indicate misuse of ketum cocktail drink among people in community.



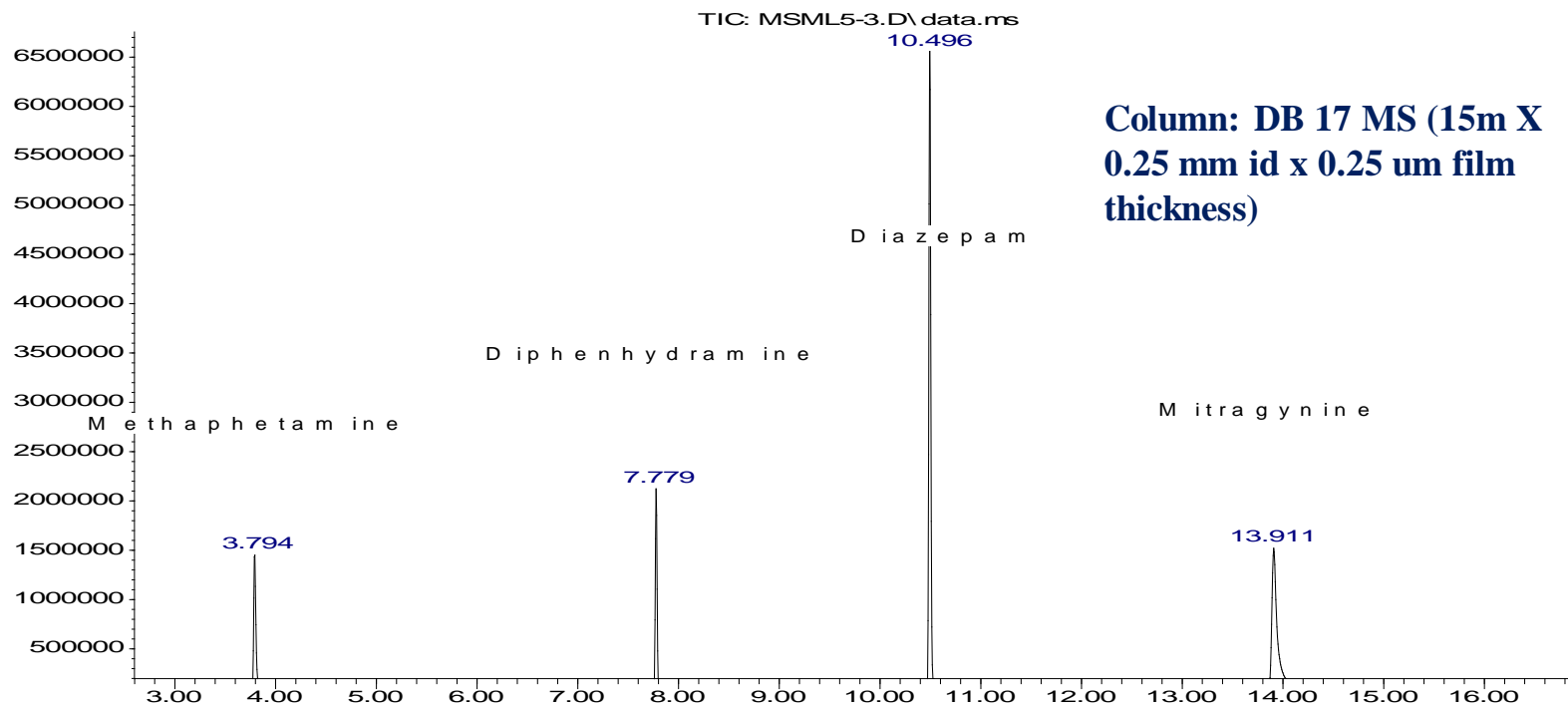
ANALYSIS



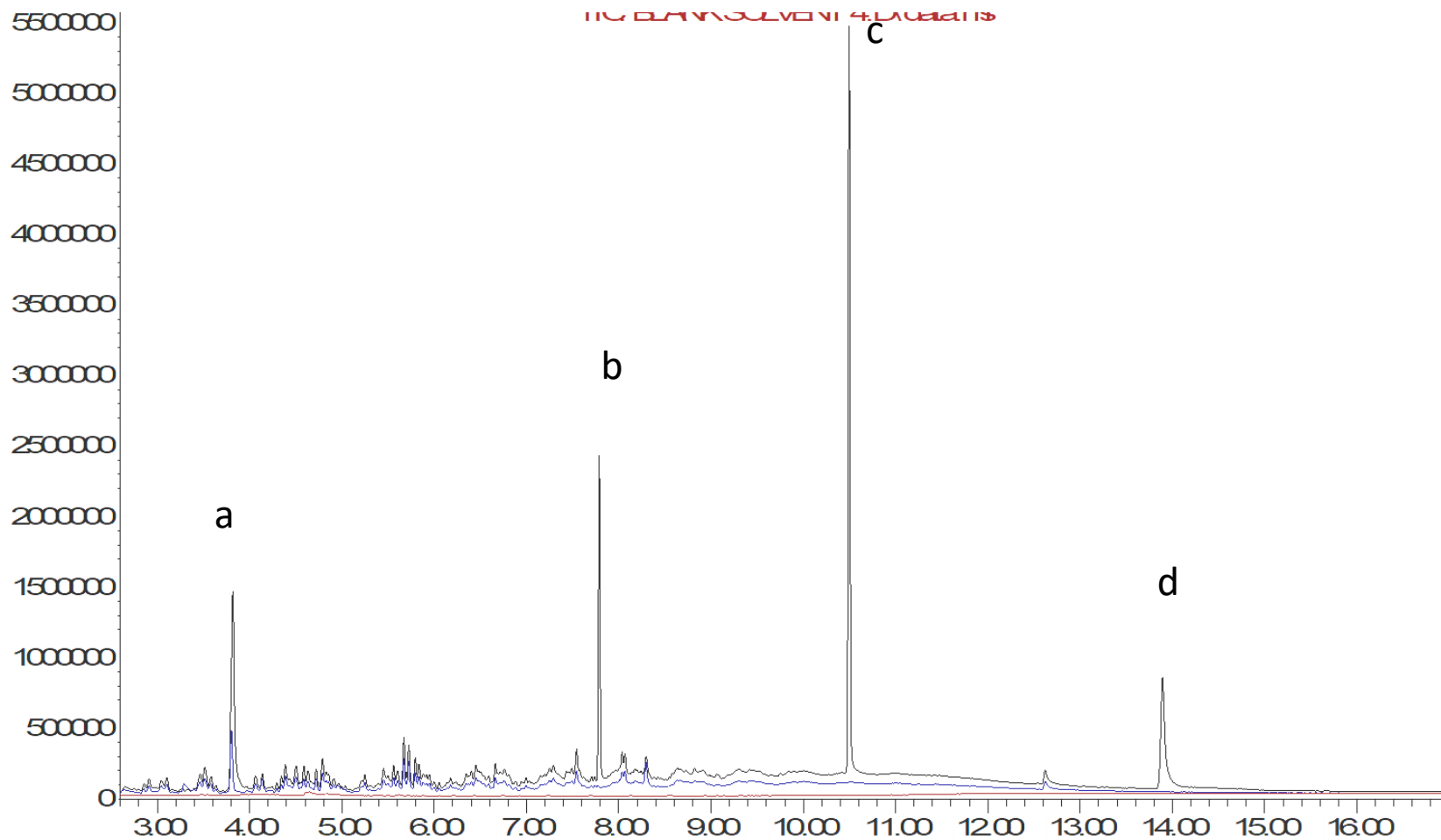
RESULT & DISCUSSION

RT: methamphetamine (3.7 mins) diphenhydramine (7.7 mins), diazepam (10.4 mins) and for MG (13.9 mins) (PBM>80).

Abundance



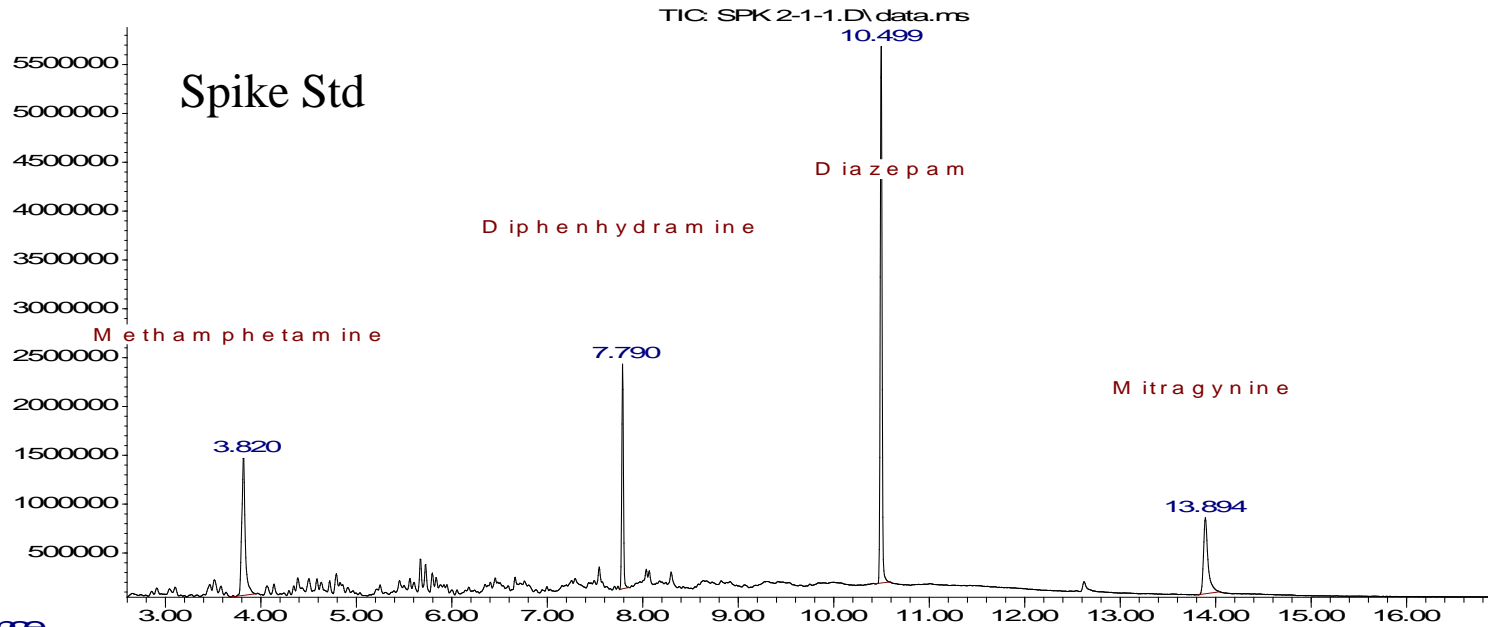
RESULT & DISCUSSION



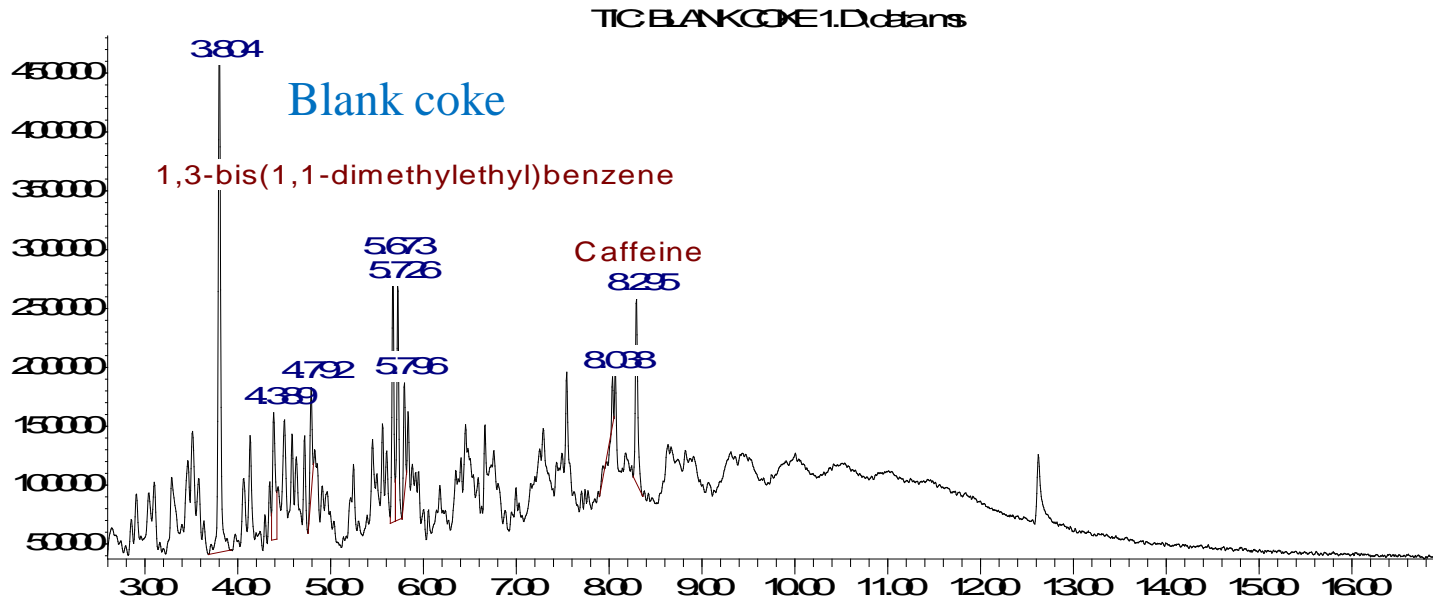
Chromatogram: Spike Standard, Blank coke and Blank solvent

RESULT & DISCUSSION

Abundance



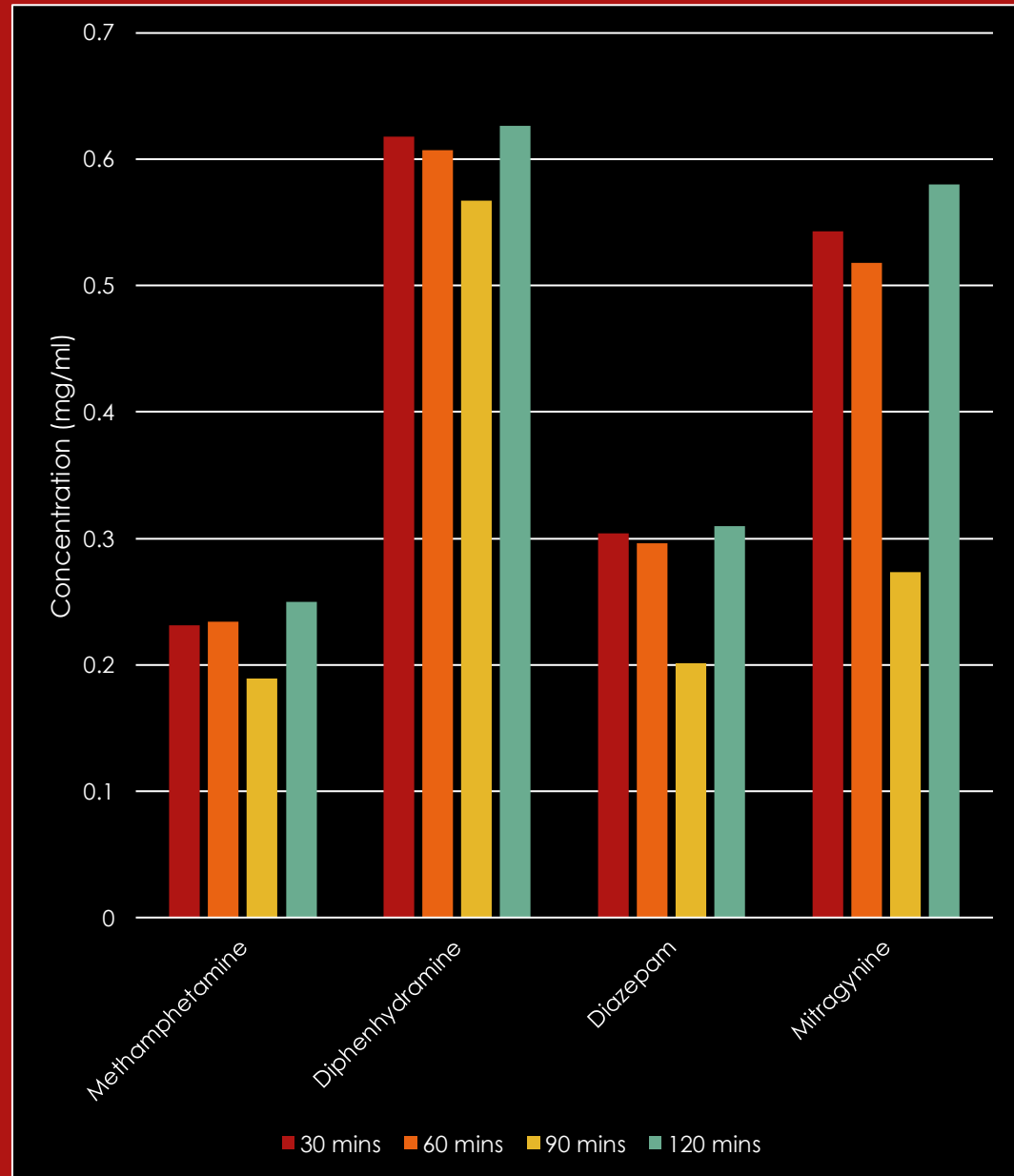
Abundance
Time→



Time→

OPTIMIZATION OF SAMPLE PRE-TREATMENT.

Analysis of variance shows there is no significant difference between roller mixer time (from 30 minutes to 120 minutes) and drug recovery from the sample. Therefore it was decided that samples was rollmixed for 30 mins during extraction process.



RESULT OF EXTRACTION OF REAL CASE SAMPLE

► Table: The result obtained from 20 real case samples.

Sample ID	Meth	DPH	DIA	MG
SPL 1	ND	Detected	ND	Detected
SPL2	ND	Detected	ND	Detected
SPL3	ND	ND	ND	ND
SPL4	ND	ND	ND	ND
SPL5	ND	Detected	ND	Detected
SPL6	ND	Detected	ND	Detected
SPL7	ND	Detected	ND	Detected
SPL8	ND	Detected	ND	Detected
SPL 9	ND	ND	ND	ND
SPL 10	ND	Detected	ND	Detected

Sample ID	Meth	DPH	DIA	MG
SPL 11	ND	ND	ND	ND
SPL 12	ND	ND	ND	Detected
SPL 13	ND	ND	ND	Detected
SPL 14	ND	ND	ND	Detected
SPL 15	ND	ND	ND	ND
SPL 16	ND	ND	ND	Detected
SPL 17	ND	ND	ND	Detected
SPL 18	ND	ND	ND	Detected
SPL 19	ND	ND	ND	Detected
SPL 20	ND	ND	ND	Detected

75%

MG

35% **MG**

+

DPH

0%

DPH

25%

ND

CONCLUSION & FUTURE WORK



Applicable for identification of drugs of interest



Polydrug user : ketum drink mix with illegal drugs
or consume ketum drink along with illegal drugs



A more proper study :

To distinguish the unknown coeluted peak with
methamphetamine

Use of internal standard for quantification

Different type of sample matrix

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