

Exploring Medicinal Use of Indonesian Psychoactive Plants

Bogota, April 27th 2025

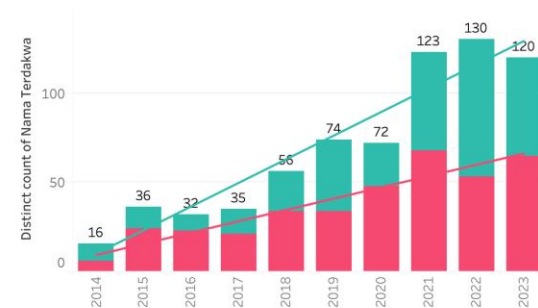
Eko Adi Prasetyanto
Asmin Fransiska

ICDR DataHub - Indonesian Drugs Cases

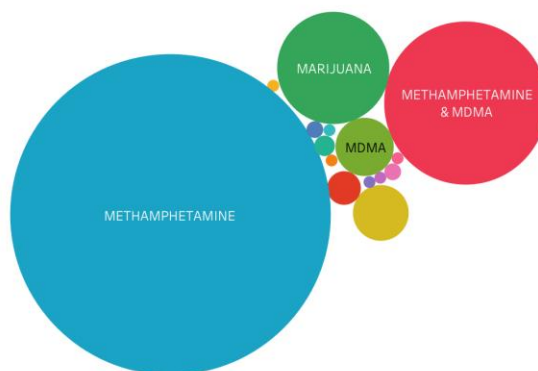
Narcotics Cases

Death Penalty and Life Imprisonment

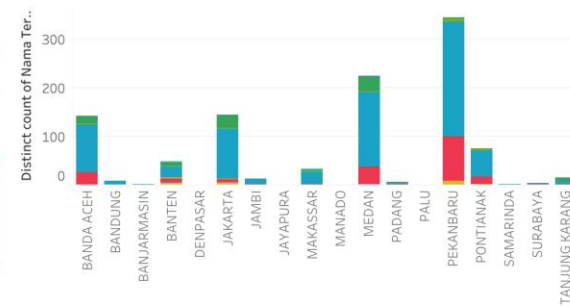
Year



Evidence(s)



Jurisdiction



Sex



Nationality



icdr

Total Cases

1.282

Jenis kelamin

(All)

Sanksi lain

(All)

Sanksi lain

Hukuman Mati

Seumur hidup

Jenis kelamin

Laki-laki

Perempuan

Evidence(s)

HEROIN

HEROIN & Unknown

KOKAIN

MARIJUANA

MDMA

METHAMPHETAMINE

METHAMPHETAMINE & H..

METHAMPHETAMINE & H..

METHAMPHETAMINE & M..

METHAMPHETAMINE & M..

METHAMPHETAMINE & M..

METHAMPHETAMINE & M..

METHAMPHETAMINE & M..

Distinct count of Nama Terdakwa

1 345

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Asmin Fransiska & Eko Adi

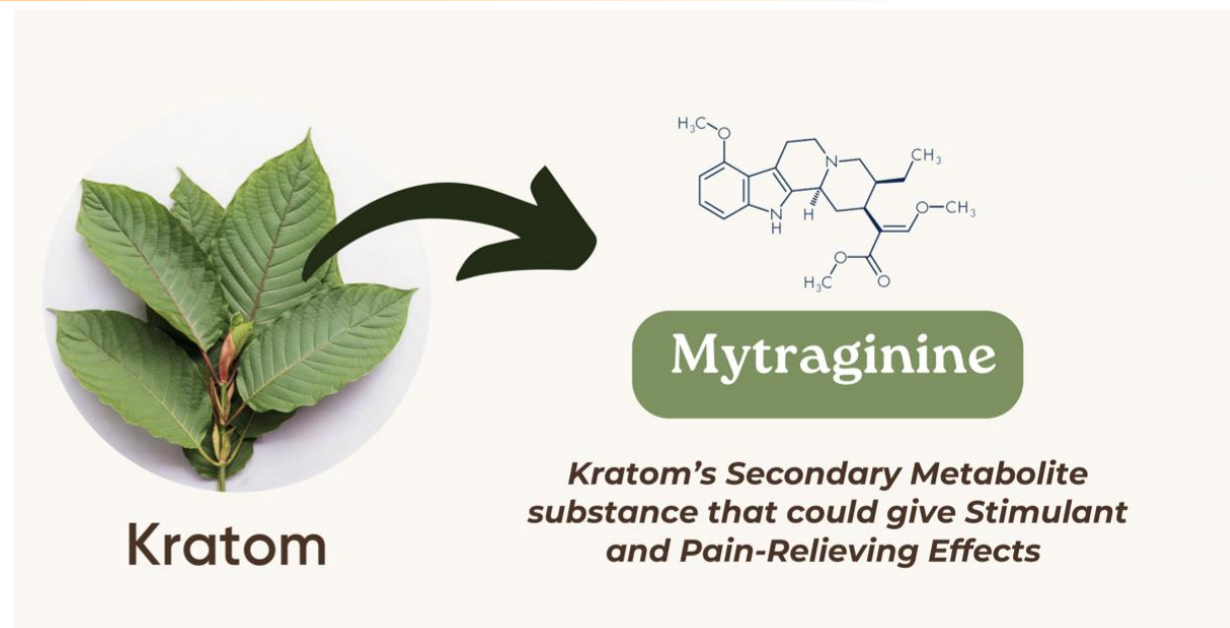
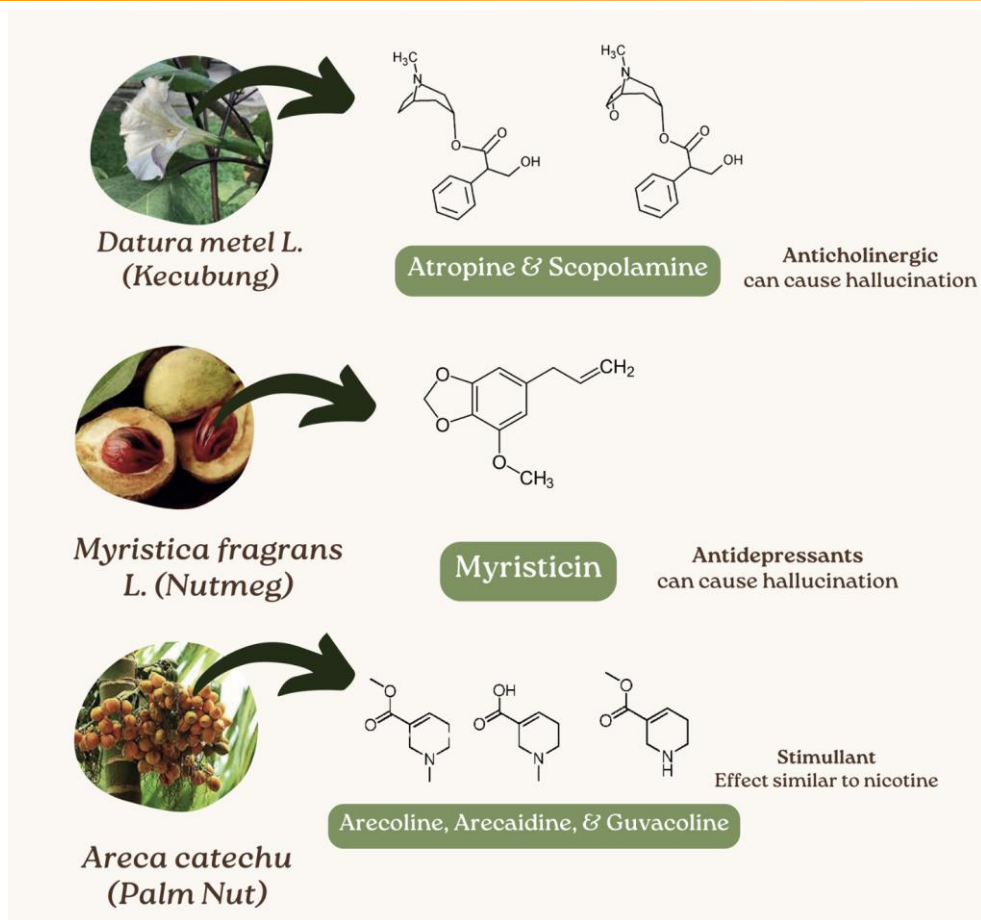
Prasetyanto,

The Indonesian Center for Drugs

Research, 2025

- Collection of more than 200.000 drugs cases in Indonesia (2014-2023)
- Contents:
 - Drugs case in general
 - Death/lifetime penalty
 - Child and women as drugs offenders
 - Non-prison sentences
 - Health related drugs user
- Asmin Fransiska will give talk on Wednesday how to use this data to advocate policy on women/children drugs user (Major 11).

Indonesian Native plants with psychoactive effect



- The National Agency of Drug and Food Control (BPOM/NA-DFC) previously issued a circular (in 2016) prohibiting the use of kratom in traditional medicines and health supplements sold domestically.
- Indonesia Drugs Agency BNN's push to classify it as a dangerous narcotics.

Kratom as analgesic (painkiller)

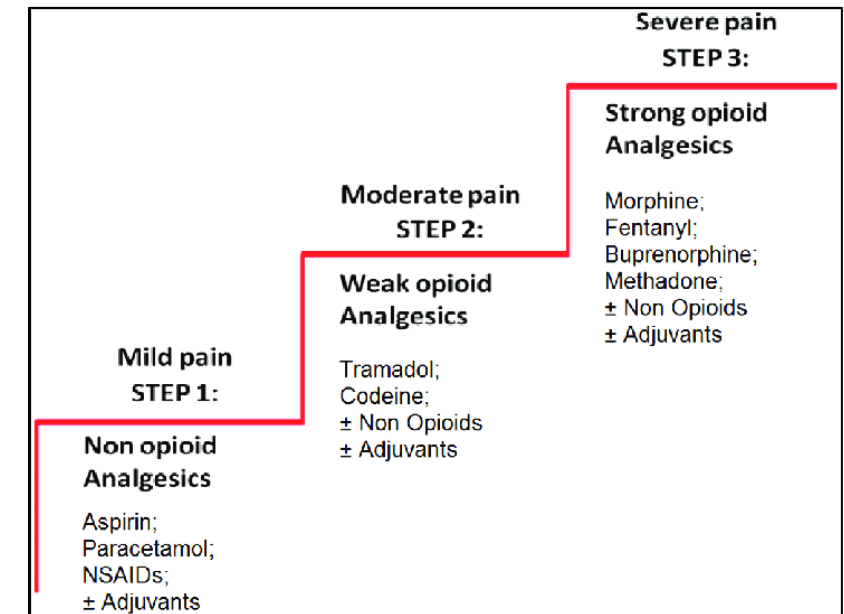
U.S. Hunger For Opioid Alternative Drives Boom in Borneo Jungle

Indonesia is the main supplier of kratom, a popular painkiller.

By [Yoga Rusmana](#) and [Bruce Einhorn](#)

5 June 2018 at 17:00 GMT+7

- How does Kratom alkaloids work as painkiller?
- Is it only working through opioid receptors or not?



Kratom alkaloids analgesic mechanism (opioid or non-opioid?)

WRITHING METHODS



peripheral action analgesia test

HOT PLATE METHODS

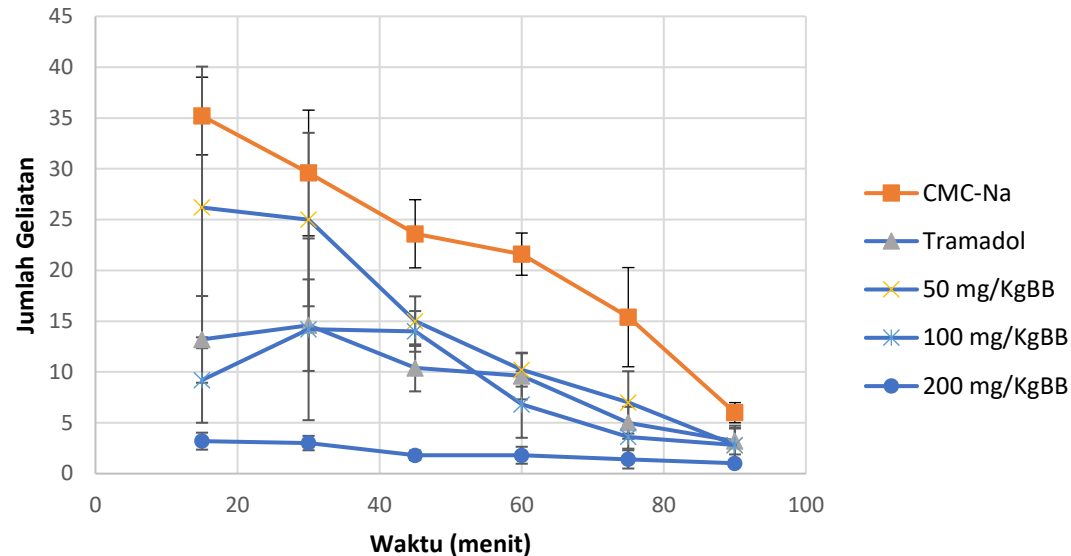


centrally acting opioid receptors test

Kratom alkaloids analgesic mechanism

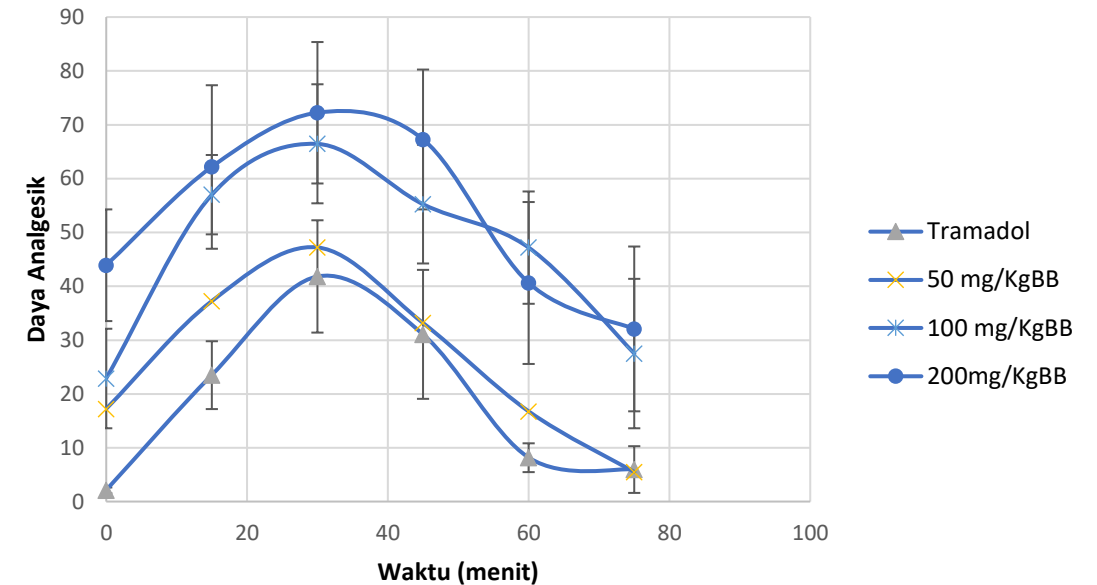
WRITHING METHODS

Jumlah Geliatan vs Waktu



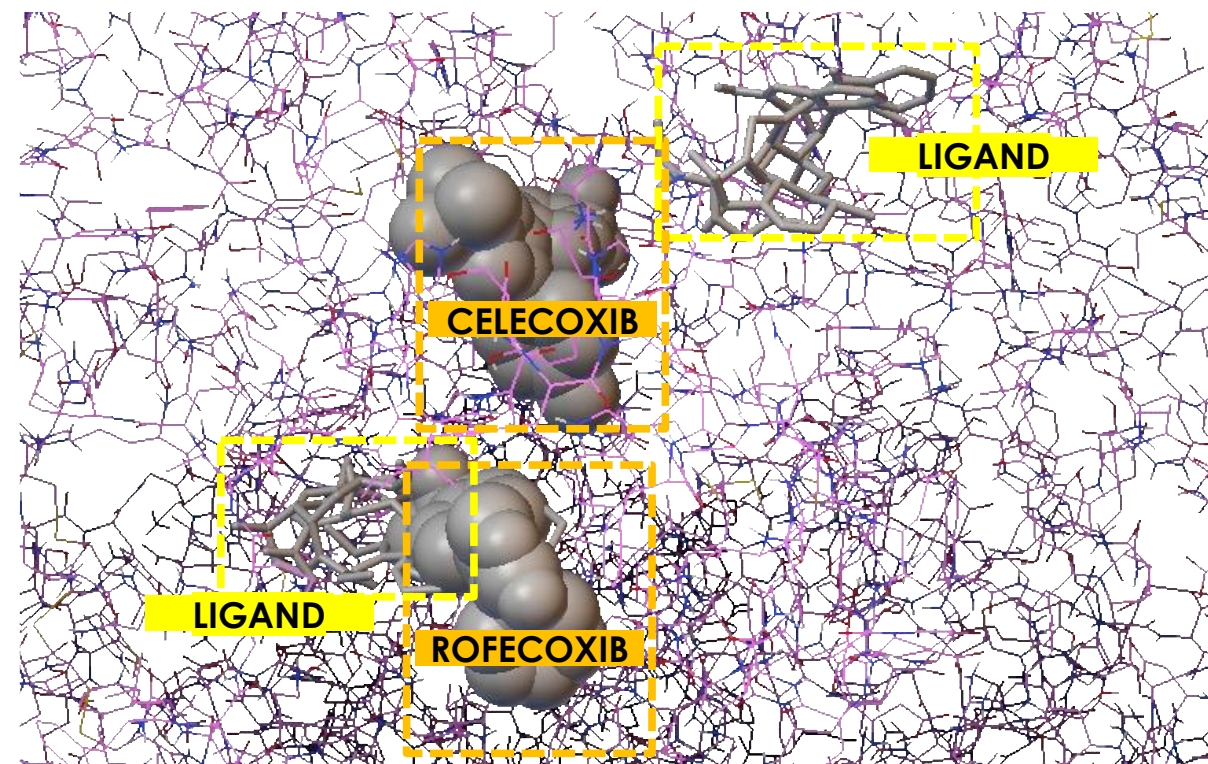
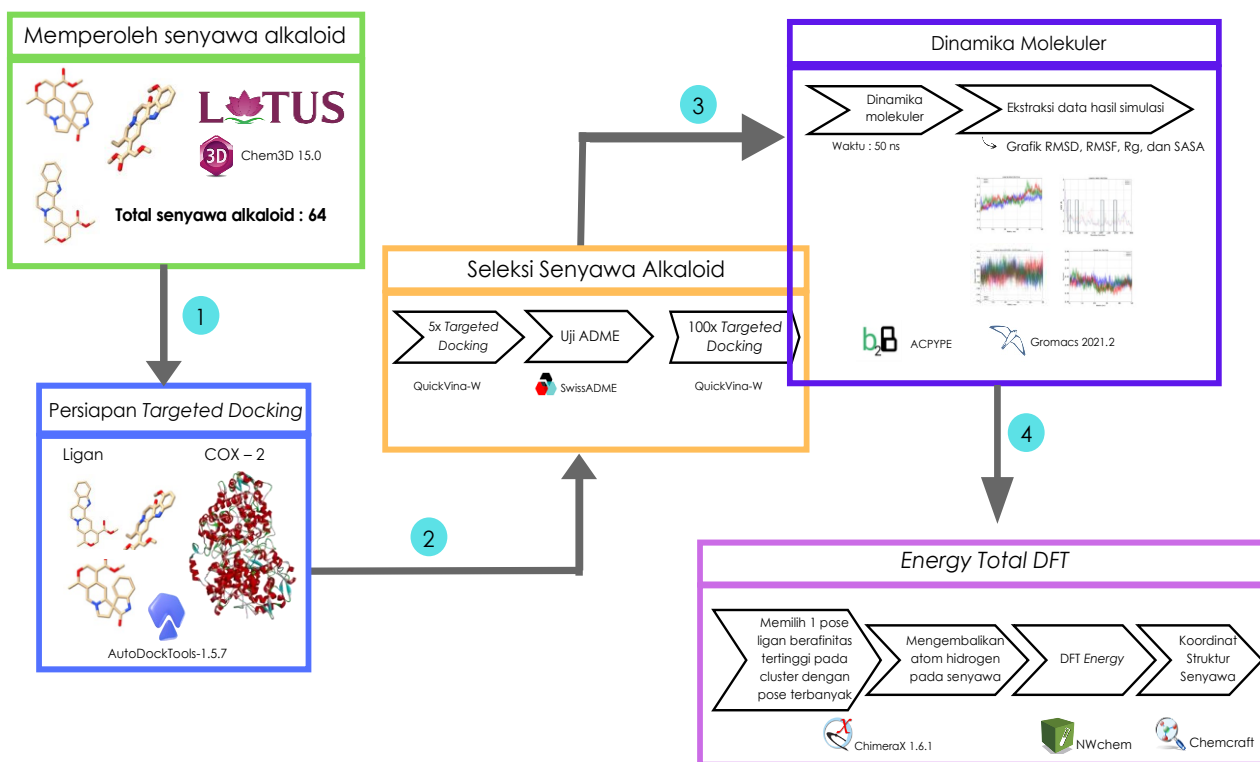
HOT PLATE METHODS

Grafik Daya Analgesik vs Waktu



- **Kratom extract is an effective pain reliever:** It works on both the central nervous system (brain and spinal cord) and peripheral areas (outside the brain and spinal cord) to reduce pain.
- In this study, the most effective dose of kratom leaf extract as an analgesic in male mice tested with both methods was a dose of 200 mg/KgBW with an analgesic power of 90.72% in the writhing test method and 86.17% in the hot plate method.
- The average effective dose (ED50) value of kratom leaf extract in the writhing test method was 86.613 ± 10 mg/KgBW and in the hot plate method was 39.761 ± 10 mg/KgBW.

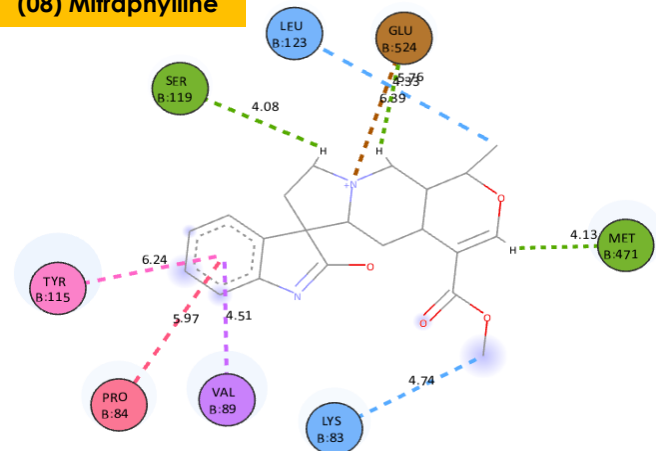
Computational Simulation: Molecular Interaction between Kratom Alkaloids and COX-2



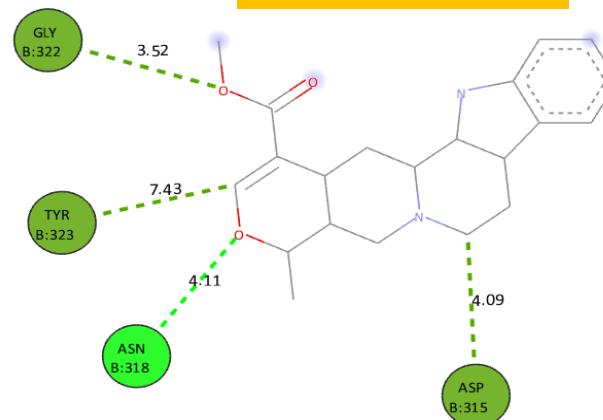
Location of ligands bound to COX-2: Comparing natural ligands (rofecoxib) and control substance (celecoxib). Visualized with AutoDockTools 1.5.7.

2D Interaction

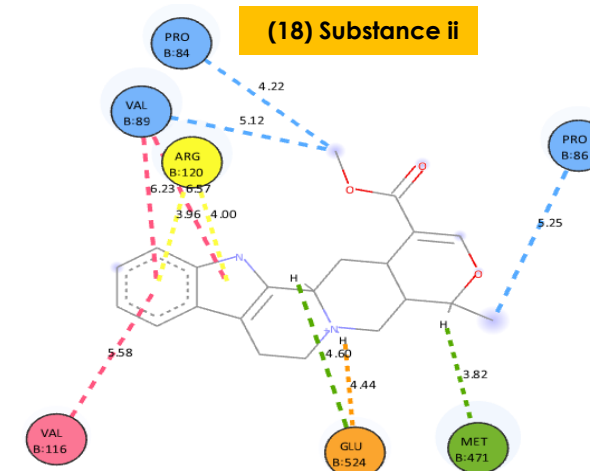
(08) Mitraphylline



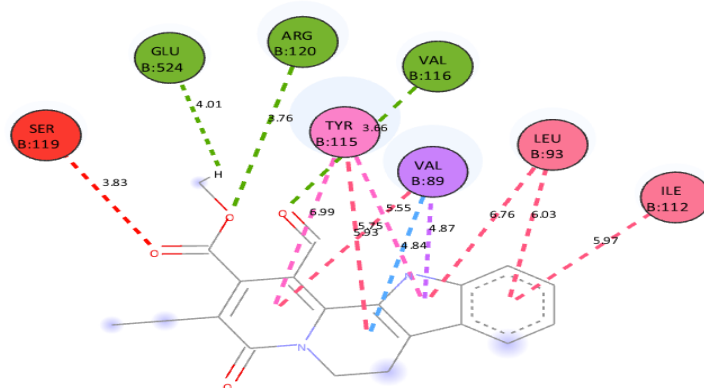
(07) Ajmalicine



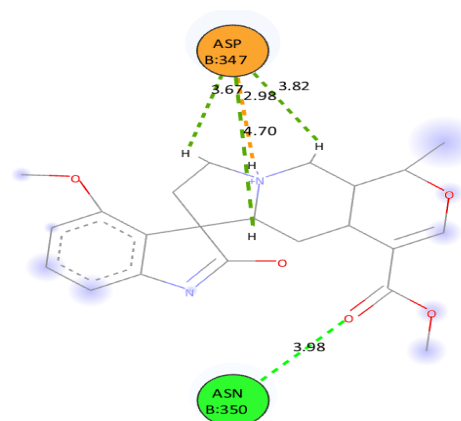
(18) Substance ii



(22) Methyl 3-ethyl-1-formyl-4-oxo-6h,7h,12h-indolof2.3-aquinolizine-2-carboxylate



(13) Methyl (1's,3s,4'as,5'as,10'ar)-2-hydroxy-4-methoxy-1'-methyl-1',4'a,5',5'a,7',8',10',10'a-octahydrospiro[indole-3,6'-pyrano[3,4-f]indolizine]-4'-carboxylate



	Conventional Hydrogen Bond		Pi-Sulfur
	Halogen (Fluorine)		Alkyl
	Pi-Donor Hydrogen Bond		Pi-Alkyl
	Pi-Sigma		Pi-Pi Stacked
	Attractive Charge		Pi-Pi T-shaped
	Salt Bridge		Pi-Cation
	Carbon Hydrogen Bond		Unfavorable Acceptor-Acceptor

Conclusion and Outlook

- Kratom alkaloids work as analgesics through both opioid and non-opioid receptors making as good candidate for future drugs development.
- Generally, the government make a shortcut by directly proposing NPS as Schedule 1 Narcotics
- Indonesia's National Narcotics Agency (BNN) had previously classified kratom as a New Psychoactive Substance (NPS) since 2013 and had proposed classifying it as a Schedule I Narcotic. A full ban was anticipated, potentially starting in 2022 or 2024.
- In 2024, government policy shifted towards regulation, particularly for production and export, driven partly by economic considerations for the thousands of farmers cultivating kratom, especially in West Kalimantan.
- We need more scientific evidences in order to effectively advocating indigenous botanical psychoactive.
- Problem: not much funding available for wet bench research on psychoactive substances in Indonesia compared to other types drugs advocacy.

Acknowledgement

ICDR Team on this project:

Pretty Falena, Michael, Yunita, Sherly
Nataya, Joyce Nidya, Kian Shun

Thank You

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