

# Kanna: Traditional Uses and Modern Applications

- Kanna (*Sceletium tortuosum*) - South African plant used by indigenous tribes.
- Traditionally used to enhance mood, reduce anxiety, and manage fatigue.
- Chewed, brewed as tea, or used in spiritual ceremonies.
- Helped alleviate thirst and fatigue, making it valuable for hunters and travelers.
- Played a significant role in trade among indigenous groups.



# Kanna Preparation and Consumption

- Powdered: Most common form, used for snuffing, smoking, or tea.
- Dried Leaf: Chewed, smoked, or brewed as tea.
- Fermented ("Kougoed"): Traditionally prepared, can be powdered or left whole.
- Tinctures: Liquid extracts, often used sublingually.
- Other: Vape liquid, smoking blends, chewing gum.



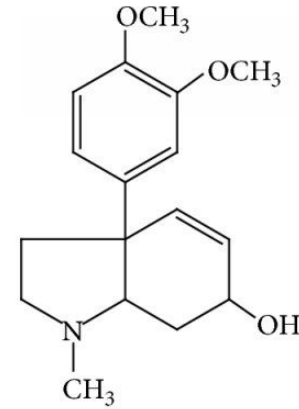
# Fermented Kanna: Key Attributes

- Fermented Kanna: Brown/dark green powder or dried leaf
- Higher mesembrenone, lower oxalic acid vs. raw kanna
- Traditional fermentation may produce optimal alkaloid profile
- Key Alkaloids: Mesembrine, Mesembrenone, others
- Exact composition varies based on fermentation method

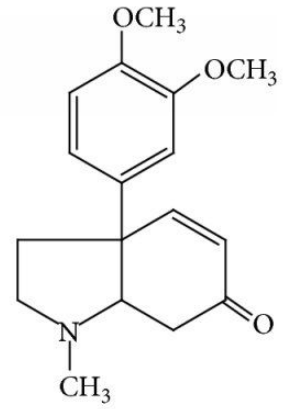


# Kanna: Key Bioactive Compounds

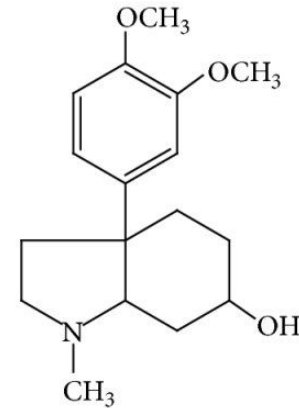
- Main Alkaloids: Mesembrine, Mesembrenone, Mesembrenol, Tortuosamine
- Mesembrine: Serotonin reuptake inhibitor, boosts mood
- Mesembrenone: Reduces anxiety & inflammation
- Additional Compounds: Antioxidants, anti-inflammatory compounds like polyphenols & terpenes



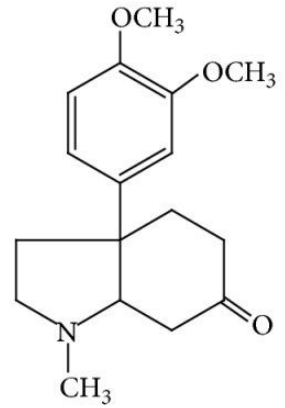
Mesembrenol



Mesembrenone



Mesembranol



Mesembrine



# How Kanna Works

- Kanna elevates mood and lessens anxiety by inhibiting serotonin reuptake.
- PDE4 inhibition reduces brain inflammation and may improve cognition.
- Kanna is a safe mood booster with no hallucinogenic effects.
- Key alkaloids like Mesembrine contribute to its therapeutic benefits.
- Kanna's unique properties differentiate it from other mood-enhancing substances.



# PDE4 Inhibitors: Mechanisms and Applications

- PDE4 Inhibitors: Elevate cAMP in cells, suppressing inflammation and modulating immune response.
- Therapeutic Applications: Asthma, COPD, Psoriasis, IBD, Arthritis, Lupus, Neuroinflammation, Fragile X Syndrome.
- Approved Inhibitors: Roflumilast (COPD, Asthma), Apremilast (Psoriasis, Arthritis), Crisaborole (Atopic Dermatitis).
- Emerging Inhibitors: CHF 6001 (COPD), GSK256066 (Asthma), BPN14770 (Fragile X Syndrome)
- Advantages: Broad anti-inflammatory effects, modulate lung structure, suppress mucus, treat pulmonary/dermatological conditions.

# PDE4 Inhibitors in Mood Disorders

- PDE4B inhibitors like A-33 show strong antidepressant effects in preclinical studies.
- PDE4D inhibitors have shown mixed results in mood disorder studies.
- Non-selective PDE4 inhibitors like Roflumilast show potential for mood disorders.
- PDE4 inhibitors may improve mood by elevating cAMP levels and activating related pathways.
- More clinical studies are needed to establish efficacy of PDE4 inhibitors for mood disorders.

