



Health Problems of Chronic Khat Chewing

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Abstract

Catha edulis plant is commonly known as khat, qat, chat or miraa belongs to the family of Celastraceae is a shrub or small to medium sized evergreen tree. Phenylalkylamine type alkaloids cathinone and cathine are mainly the chemical constituents of Khat leaves which are considered to be responsible for the pharmacological actions. Cathinone has a high abuse potential and releases endogenous catecholamines from peripheral and central neurons. Khat chewing is known to cause serious a health issue due to Khat consumption is addictive, causing some psychologic and/or biologic dependence. The World Health Organization classified khat as an illegal drug, as causing psychological but not physical dependence and indicated that its abuse may cause a range of health challenges. Long term use or abuse can cause insomnia, anorexia, gastric disorders, depression, liver damage and cardiac complications. Manic and delusional behavior violence, suicidal depression, hallucinations, paranoia and Khat induced psychosis have also been observed among chronic khat chewers.

Keywords: Chronic; Health problems; Khat chewing

Introduction

Catha edulis plant is commonly known as khat, qat, chat or miraa belongs to the family of Celastraceae is a shrub or small to medium sized evergreen tree. Catha edulis is frequently cultivated as a bush or small tree, mainly in Yemen and East African Countries [1]. Khat chewing supporters claimed that chewing khat is useful in individuals with diabetes mellitus because it reduces blood sugar, acts as a remedy for bronchial asthma, and eases symptoms of intestinal tract disorders and maintains social contact as a socializing herb. An opponent of khat chewing claimed that khat injures health and affects many aspects of life with its adverse social, economic and medical consequences [2]. Predominantly khat chewing is a male habit, although the number of women indulging in chewing habit is on the rise. Individuals frequently practice chewing habit in special social gatherings, known as khat session, which continues for several hrs to a day. The habit of chewing involves inserting and chewing fresh khat leaves, forming a bolus that is retained in the lower buccal vestibule against the check one side, or rarely, on both sides. The juice is swallowed and partially expectorated while the quid is

ejected at the end of the session [3,4]. Phenylalkylamine type alkaloids cathinone and cathine are mainly the chemical constituents of Khat leaves which are considered to be responsible for the pharmacological actions. Cathinone is structurally related to amphetamine and has same pharmacological actions [5].

There are three main alkaloids present in khat leaves such as S-(–)-cathinone (s--aminopropiophenone), norepseudoephedrine (cathine) and norephedrine. There are also small amounts of ethereal oil, sterols and triterpenes, together with 5% protein which has insignificant nutritional value. Ascorbic acid is also present in the leaves. Khat leaves also contains tannin (7–14% by weight in dried leaves) and low amount of thiamin, niacin, riboflavin, iron and amino acids [6,7]. The mechanism of action of cathinone is similar to that of amphetamine, acting by releasing catecholamines from presynaptic storage sites. Cathinone and amphetamine induce dopamine release from central dopaminergic nerve terminals thus elevating the activity of dopaminergic pathways [8]. Cathinone has a high abuse potential and releases endogenous catecholamines from peripheral and central neurons [9]. Cathinone, like 3, 4-methylenedioxymethamphetamine

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('ecstasy') and amphetamine, exerts pronounced behavioural effects including euphoria, excitability, anxiety, irritability, hyperactivity, restlessness and insomnia [10]. Khat chewing is known to cause serious a health issue due to Khat consumption is addictive, causing some psychologic and/or biologic dependence [11].

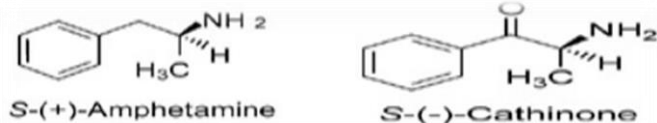


Figure 1: Chemical structure of amphetamine and cathinone.

The World Health Organization classified khat as an illegal drug, as causing psychological but not physical dependence and indicated that its abuse may cause a range of health challenges [12]. The World Health Organization observe has found that khat use causes dependency, predisposes the individual to myocardial infarction, ischemic heart disease, psychosis, distress, premature ejaculation, unprotected sex, manic episodes, oesophageal cancer, low birth weight and lactation problems, structural and functional brain changes, and criminal activity [13]. Chronic consumption can lead to impairment of mental health, substance dependency, early sexual debut unprotected sex mental health issues and with various social, cognitive and financial challenges [14]. Long term use or abuse can cause insomnia, anorexia, gastric disorders, depression, liver damage and cardiac complications. Manic and delusional behavior violence, suicidal depression, hallucinations, paranoia and Khat induced psychosis have also been observed among chronic khat chewers [15]. Long term khat use has also been correlated with several oral and dental disorders such as keratotic white lesions, mucosal pigmentation, plasma cell stomatitis, tooth loss, teeth attrition and discoloration, gingival recession, periodontal diseases, and temporomandibular joint disorders. A high incidence of temporomandibular joint problems, reduced periodontal pocket depth, and buccal mucosa keratosis have also been observed. Development of oral white lesions on the buccal mucosa on the chewing side also occurred among chronic khat chewers [16,17]. Cardiovascular effects of khat chewing in humans involve elevated blood pressure and elevates in heart rate. Individuals who chewed Khat also high risk to death following stroke and heart failure [18]. The amphetamine-rich nature of khat leaves resulted in symptoms such as tachycardia, hyperthermia, and dryness of the month, tachypnoea, mydriasis, and restlessness. Chronic ingestion of khat exposes the chewers to thrombocytosis, which may lead to myocardial infarction, ischemic heart disease, cardiogenic shock, arrhythmia, manic-like schizophrenia and distress secondary to withdrawal [19]. Other observed adverse effects include erectile dysfunction (reduced

sperm count), involvement in unsafe, psychotic experiences oesophageal cancer, low birth weight among pregnant mother chewers, and lactation problem postnatal [20]. The toxic effects of varying levels of khat leaves have been examined with resulting of adverse effects on vital organs, including the liver and kidneys, as documented in elevated plasma levels of alkaline phosphatase, aspartate aminotransferase, and alanine aminotransferase and a reduce in direct bilirubin levels has also been observed. Acute hepatocellular degenerative and regenerative activities were noted histopathologically. Tissue sections of the kidneys have shown fatty degeneration in the upper cortical tubules, acute cellular swelling, hyaline tubules, and acute tubular necrosis [21,22]. Gastro-intestinal challenges involve constipation, stomatitis, esophagitis and gastritis. A significant correlation between the habit of khat chewing and the development of haemorrhoidal disease was observed. Besides damaging health, Khat has adverse socio-economic consequences effects on many other aspects of life including the loss of thousands of acres of arable land and billions of hours of work [23].

Conclusion

Predominantly khat chewing is a male habit, although the number of women indulging in chewing habit is on the rise. Individuals frequently practice chewing habit in special social gatherings, known as khat session, which continues for several hrs a day. Cathinone and amphetamine induce dopamine release from central dopaminergic nerve terminals thus elevating the activity of dopaminergic pathways. The World Health Organization observe has found that khat use causes dependency, predisposes the individual to myocardial infarction, ischemic heart disease, psychosis, distress, premature ejaculation, unprotected sex, manic episodes, oesophageal cancer, low birth weight and lactation problems, structural and functional brain changes, and criminal activity. Khat leaves has vasoconstrictor properties that may lead to elevated blood pressure, increases in heart rate and increased incidence of acute myocardial infarction.

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Competing interests

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References

1. Bereda G. Catha Edulis Forsk and Its Adverse Effects on Health: Current and Ongoing Factuality. *Ann Clin Med Case Rep.* 2021; 7: 1-10.
2. Pendl E, Pauritsch U, Kollroser M, Schmid MG. Determination of cathinone and cathine in Khat plant material by LC–MS/MS: Fresh vs. dried leaves. *Forensic Sci Int.* 2021; 319: 110658.
3. Gonçalves JL, Alves VL, Aguiar J, Teixeira HM, Câmara JS. Synthetic cathinones: an evolving class of new psychoactive substances. *Crit Rev Toxicol.* 2019; 49: 549-66.
4. Etana MB. Economic and social impacts of khat (*Catha edulis* Forsk) chewing among youth in Sebeta town, Oromia Ethiopia. *Biomedical Statistics and Informatics.* 2018; 3: 29-33.
5. Mihretu A, Nhunzvi C, Fekadu A, Norton S, Teferra S. Definition and validity of the construct “Problematic Khat Use”: a systematic review. *Eur Addict Res.* 2019; 25: 161-172.
6. Makeen A, Al-Faify A, Elreffaey S. A Qualitative Study to Assess the Competencies Of Women Living In Faifa Mountains To Help Men For Withdrawal Of Chewing Khat Habit; Jazan Region, Saudi Arabia. *Egyptian Society of Clinical Toxicology J.* 2021; 9: 1-20.
7. Mihretu A, Nhunzvi C, Fekadu A, Norton S, Teferra S. Definition and validity of the construct “Problematic Khat Use”: a systematic review. *Eur Addict Res.* 2019; 25: 161-72.
8. Malasevskaia I, Al-Awadhi AA, Mohammed L. Tea in the Morning and Khat Afternoon: Health Threats Due to Khat Chewing. *Cureus.* 2020; 12: e12363.
9. Muacevic A, Adler J, Malasevskaia I, Al-Awadhi A, Mohammed L. Tea in the Morning and Khat Afternoon: Health Threats Due to Khat Chewing. *Cureus.* 2021; 12: e12363.
10. Muacevic A, Adler J, Malasevskaia I, Al-Awadhi A, Mohammed L. Tea in the Morning and Khat Afternoon: Health Threats Due to Khat Chewing. *Cureus.* 2021; 12.
11. Derso AG, Dagnaw GG. Exposure and health risk assessment of farmers to DDT during khat production in chiro Woreda, west Hararghe zone Ethiopia. *World J Agricultural Research.* 2019; 7: 29-35.
12. Lovrecic B, Lovrecic M, Gabrovec B, Carli M, Pacini M, Maremmani AG, Maremmani I. Non-medical use of novel synthetic opioids: a new challenge to public health. *Int J Environ Res Public Health.* 2019; 16: 177.
13. Albaser NA, Mohamad AW, AL-Kamarany MA. Khat-drug interactions: A systematic review. *J Pharmacy Pharmacognosy Res.* 2021; 9: 333-43.
14. Muacevic A, Adler J, Malasevskaia I, Al-Awadhi A, Mohammed L. Tea in the Morning and Khat Afternoon: Health Threats Due to Khat Chewing. *Cureus.* 2021; 12: e12363.
15. Lim SY, Azidin AR, Ung YT, Al-Shagga M, Alshawsh MA, Mohamed Z, et al. Effect of 95% ethanol khat extract and cathinone on in vitro human recombinant cytochrome P450 (CYP) 2C9, CYP2D6, and CYP3A4 activity. *European journal of drug metabolism and pharmacokinetics.* 2019; 44: 423-431.
16. Latif Z, Garg N. The impact of marijuana on the cardiovascular system: a review of the most common cardiovascular events associated with marijuana use. *J Clinical Med.* 2020; 9: 1925.
17. Luethi D, Liechti ME. Designer drugs: mechanism of action and adverse effects. *Arch Toxicology.* 2020; 94: 1085-133.
18. Faria AC, Carmo H, Carvalho F, Silva JP, de Lourdes Bastos M, da Silva DD. Drinking to death: Hyponatraemia induced by synthetic phenethylamines. *Drug and alcohol dependence.* 2020; 212: 108045.
19. Riley AL, Nelson KH, To P, López-Arnau R, Xu P, Wang D, et al. Abuse potential and toxicity of the synthetic cathinones (ie, “Bath salts”). *Neuroscience Biobehavioral Reviews.* 2020; 110: 150-73.
20. Alamgir AN. Secondary metabolites: Secondary metabolic products consisting of C and H; C, H, and O; N, S, and P elements; and O/N heterocycles. In *Therapeutic Use of Medicinal Plants and their Extracts*: Springer, Cham. 2018; 2: 165-309.
21. Evert AB, Dennison M, Gardner CD, Garvey WT, Lau KH, MacLeod J et al. Nutrition therapy for adults with diabetes or prediabetes: a consensus report. *Diabetes care.* 2019; 42: 731-54.
22. Uthoff RD, Song B, Sunny S, Patrick S, Suresh A, Kolar T et al. Point-of-care, smartphone-based, dual-modality, dual-view, oral cancer screening device with neural network classification for low-resource communities. *PloS one.* 2018; 13: e0207493.
23. Albaser NA, Mohamad AW, AL-Kamarany MA. Khat-drug interactions: A systematic review. *Journal of Pharmacy & Pharmacognosy Research.* 2021; 9: 333-43.
24. Al-Maweri SA, Al-Jamaei A, Saini R, Laronde DM, Sharhan A. White oral mucosal lesions among the Yemeni population and their relation to local oral habits. *Journal of investigative and clinical dentistry.* 2018; 9: e12305.