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Plant-Based Approaches Used for the Treatment of Monkeypox Disease

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ABSTRACT

Monkeypox is a rare viral disease in Central and West Africa. Traditional medicine is used to help with symptoms and recovery. Plants have been influential in indigenous healthcare and scientifically shown to have therapeutic benefits. This discourse explores how botanical resources can help treat monkeypox by studying their active components and modes of action. It highlights the need for further research to confirm their safety and effectiveness in therapy.

1. Introduction

Explanation of Monkeypox disease

Monkeypox is an infectious ailment instigated by the Monkeypox pathogen that is classified under the Orthopoxvirus lineage. The ailment was initially detected in 1958 when clusters of cases emerged among captive primates used for scientific investigation. After this, there have been documented incidences of human contraction, predominantly within the confines of central and West African nations, while occasional outbursts have surfaced in assorted locales. Monkeypox is a zoonotic disease that can be transmitted from animals to humans. This disease demonstrates clinical similarities to smallpox, though it typically exhibits a less severe nature.

Plant based remedies or traditional medicine

Traditional medicine is crucial in healthcare around the globe, especially for indigenous groups in monkeypox-prone areas who use botanical remedies to treat various conditions. Indigenous healers know a lot about local plants and their healing powers. They use botanical treatments to manage monkeypox, easing symptoms, boosting immunity, and aiding recovery.

Traditional medicine importance in Monkeypox treatment

Traditional medicine is vital in monkeypox-stricken areas where indigenous communities possess valuable knowledge of local flora and its medicinal properties. Traditional healers know how to use plant remedies to treat various medical conditions, including monkeypox. They have passed down their knowledge through oral tradition, making traditional medicine valuable in areas without modern medical resources.

Ethnobotanical analysis

Analysis of medicinal flora for monkeypox treatment has involved traditional healers and communities for comprehensive data on the botanical matter and its therapeutic interventions. Ethnobotanical research protects knowledge, promotes sustainability, and discovers plant healing compounds [1].

2. Plants that can help treat monkeypox are often used as medicine

Traditional medicine uses several medicinal plants as monkeypox remedies. Additional scientific validation is needed, but the historical utilization and anecdotal evidence justify further investigation.

Table 1: Plants used for the treatment of monkeypox virus

Sr. #	Plant Name	Scientific Name
1	*Soursop*	*Annona muricata*
2	*African Eggplant*	*Solanum macrocarpon*
3	*Aloe vera*	*Aloe barbadensis*
4	*Plantain*	*Plantago*
5	*Ginger*	*Zingiber officinale*
6	*African Mistletoe*	*Tapinanthus bangwensis*
7	*Neem*	*Azadirachta indica*
8	*Purple Coneflower*	*Echinacea pourpre*
9	*Garlic*	*Allium sativum*

Role of plantain in Monkeypox disease

Plantain is used in traditional medicine to treat skin issues, including monkeypox lesions. The substance is enriched with bioactive for inflammation and wound healing. Plantain leaves are often used topically or in baths to promote wound healing and soothe skin irritations. Plantain leaves are often applied externally to treat skin lesions and itching from monkeypox. Plantain plants have bioactive compounds like iridoids, flavonoids and tannins that show anti-inflammatory and wound-healing properties.

African mistletoe used for the treatment of monkeypox

African mistletoe parasitizes multiple trees in Africa. Traditional medicine has used this substance for its immunomodulatory and antiviral properties. African mistletoe has bioactive compounds like lectins and polysaccharides that show antiviral and immune-stimulating effects in preclinical studies. African mistletoe shows promise for treating monkeypox. The African mistletoe is popular in traditional medicine for its immunity-boosting and antiviral properties. This substance is often used to treat viral illnesses, such as monkeypox. African mistletoe's lectins and polysaccharides show antiviral and immune-modulating effects.

Properties of garlic for the treatment of monkeypox disease

Garlic is known to possess antimicrobial and immunomodulatory properties that may potentially aid the immune system in combating viral infections. Figure 1 show the transmission cycle of Monkeypox.

Characteristics of soursop for monkeypox virus

Soursop, or Graviola, is a tropical plant in the Annonaceae family. Parts like leaves, bark, and fruit have been used in ethnomedicine for healing purposes. Soursop contains bioactive compounds, including antiviral acetogenins. Soursop shows promise in treating monkeypox due to its ability to inhibit viral replication and influence the immune system. The soursop plant's leaves and fruits have medicinal uses for immune system enhancement and fever relief in cases of monkeypox. Soursop has antiviral and immunomodulatory effects due to its acetogenins.

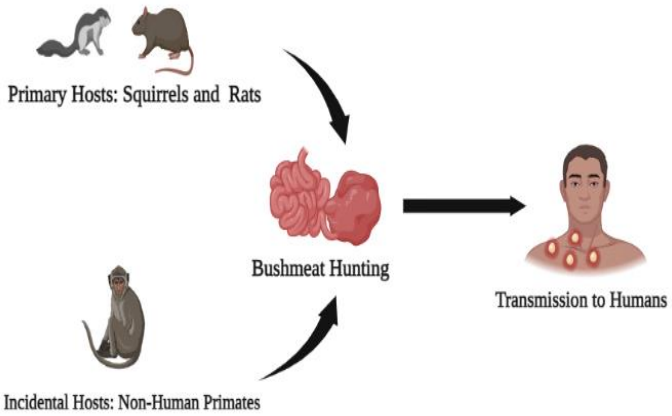

Figure 1: Transmission cycle of Monkeypox

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Echinacea has immunostimulatory characteristics

This botanical specimen is recognized for its immunostimulatory characteristics and has been shown to bolster the body's natural defense mechanisms against viral pathogens.

Neem used for the treatment of monkeypox disease

The neem tree has versatile medicinal properties. Neem parts (leaves, bark, and oil) have traditional medicinal uses for antiviral, anti-inflammatory, and immunomodulatory purposes. Neem's nimbin and nimbidin have antiviral properties against many viruses. Neem's varied healing properties make it ideal for treating Monkeypox. Neem has long been used in traditional medicine for medicinal purposes. Neem aids monkeypox treatment with antiviral, anti-inflammatory, and immune-boosting properties. Neem product has nimbin and nimbidin compounds with antiviral properties.

Aloe vera helpful for monkeypox lesions

Renowned for its therapeutic qualities in calming and repairing tissue damage, aloe vera gel displays promising potential in mitigating symptoms and facilitating the recuperation of dermal lesions inflicted by monkeypox.

African eggplant has a bioactive compound for monkeypox disease

It's used in traditional medicine to enhance health. The African eggplant has bioactive components, including alkaloids, flavonoids, and saponins, that may explain its anti-viral and immunomodulatory potential. More research is needed to understand how African eggplant can treat monkeypox. African eggplant noted for potent antiviral and immunomodulatory traits. For monkeypox management, various plant parts are used. African eggplant's therapeutic benefits come from alkaloids, flavonoids, and saponins.

Ginger used for the treatment of monkeypox disease

The anti-inflammatory and antioxidant properties exhibited by ginger may potentially aid in the amelioration of inflammation and facilitation of the body's healing mechanisms in the context of monkeypox infection [2].

3. Chemical constituents and mechanism of action

Phytochemical analysis of plants

The process of conducting a phytochemical analysis entails the thorough analysis and categorization of biologically active compounds that are inherent in various botanical sources utilized for medicinal purposes. This statement highlights the presence of diverse organic compounds in the form of secondary metabolites, such as alkaloids, flavonoids, terpenoids, phenolic substances, and other chemical entities. Phytochemical investigations afford valuable insights into the constituent chemical makeup of plants and facilitate comprehension of their prospective therapeutic efficacies.

Antiviral compounds used for monkeypox disease

Medicinal plants used for monkeypox treatment possess antiviral compounds that inhibit replication or host entry. Soursop and neem have antiviral properties against different types of viruses. Identifying antiviral compounds in plants aids research and pharmaceuticals.

Immunomodulatory effects of medicinal plants

Medicinal plants used for monkeypox treatment have immunomodulatory effects, regulating the immune system's response by increasing immune system activity, stimulating immune cell generation, and modulating cytokine secretion. Tapinanthus pangenesis, an African mistletoe, contains bioactive compounds with immunostimulatory properties that can help eliminate viral pathogens and rapid recovery.

Anti-inflammatory properties of plants

Monkeypox causes inflammation with symptoms such as redness, swelling, and pain. The plants used to treat monkeypox have anti-inflammatory properties to alleviate these symptoms. Bioactive compounds in plants such as flavonoids, tannins, and terpenoids inhibit inflammation-inducing mediators, reducing inflammation.

Mechanisms of action medicinal plants

Medicinal plants used for treating monkeypox have antiviral, immunomodulatory, and anti-inflammatory effects, and may have other modes of action. Certain plants have antioxidant properties that boost cellular health and others promote wound healing to prevent infections. The ways botanicals work depend on the plant species and their active components. To understand how they can treat monkeypox, it's important to know their active constituents and modes of action. More research is needed to confirm mechanisms and targets for the phenomenon mentioned. It's important to study how different plant compounds interact with the virus and host immune system for a better understanding of their effectiveness [3].

4. Experiments and future advice

Lack of scientific Indication

When studying traditional medicinal plants for monkeypox treatment is limited scientific evidence available, which mostly consists of expected understanding and narrations. Further research is necessary to verify the safety, effectiveness, and mechanisms of botanical specimens. Evidence-based guidelines are needed for traditional medicine integration into modern healthcare systems. Botanical remedies may help manage monkeypox and other diseases despite obstacles and advancements in science [4].

5. Conclusion

Monkeypox virus treated with plant medicine in resource-limited regions. These plants can treat monkeypox. These plants have bioactive compounds that are antiviral, immunomodulatory, and anti-inflammatory. More research is needed to confirm effectiveness, safety, and dosage. Plant-based methods manage monkeypox by fighting viruses, enhancing immunity, decreasing inflammation, and aiding wound healing. Applicants have potential and need further evaluation. Science improves plant remedies. Collaboration among healers, communities, scientists, and healthcare professionals is vital for merging traditional and modern medicine in monkeypox research. Healers' knowledge is valuable. Integrating modern safety assessments into traditional medicine is beneficial. Research is needed for monkeypox treatment plants. To study phytochemicals, analyze, standardize, control quality, and promote sustainability. Plants treat monkeypox potential. The medicine offers bioactive agents and therapeutic benefits, but integration healthcare requires careful validation, standardization, sustainability and collaboration. Research can enhance monkeypox plant treatments and benefit healthcare.

References

[1] Haider N, Guitian J, Simons D, Asogun D, Ansumana R, Honeyborne I, et al. Increased outbreaks of monkeypox highlight gaps in actual disease burden in Sub-Saharan Africa and in animal reservoirs. Int J Infect Dis. 2022;122:107–11.

[2] Malabadi RB, Kolkar P, Chalannavar K. Human Monkeypox detected first time In India: role of traditional herbal treatment. Int J Sci res rev. 2022;4(12):3686–91.

[3] Akash S, Hossain A, Hossain MS, Rahman MM, Ahmed MZ, Ali N, et al. Anti-viral drug discovery against monkeypox and smallpox infection by natural curcumin derivatives: A Computational drug design approach. Front Cell Infect Microbiol. 2023;13:272.

[4] Brainard J, Hunter PR. Misinformation making a disease outbreak worse: outcomes compared for influenza, monkeypox, and norovirus. Simulation. 2020;96(4):365–74.