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# Ayurvedic Cream Formulation for the Treatment of Cancer as an Antitumor Activity

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**ABSTRACT:** The abstraction process of Mexican prickly poppy roots to prepare cream involves several steps. First, the roots are harvested and cleaned to remove any dirt or debris. Then, they are chopped or ground into smaller pieces to increase surface area. Next, the chopped roots are usually soaked or simmered in a carrier oil, such as coconut or olive oil, over low heat to extract their beneficial compounds. This infusion process can take several hours or even days to ensure thorough extraction. Once the oil has been infused with the properties of the prickly poppy roots, it is strained to remove any solid particles. The infused oil can then be used as a base ingredient in cream formulations, along with other emollients, stabilizers, and preservatives, to create a topical cream with potential skincare benefits.

The extraction process for Mexican prickly poppy roots typically involves using a solvent, such as ethanol or water, to extract the bioactive compounds from the roots. Here's a general outline of the process:

1. **Harvesting and Cleaning:** The roots are harvested from the plant and cleaned to remove any dirt or debris.
2. **Drying:** The cleaned roots are then dried to reduce moisture content, which helps preserve the quality of the final extract.
3. **Grinding:** Once dried, the roots may be ground into a coarse powder to increase the surface area for extraction.
4. **Extraction:** The powdered roots are then mixed with a solvent, such as ethanol or water, in a suitable vessel. The mixture is often heated or agitated to facilitate the extraction of bioactive compounds from the roots into the solvent.
5. **Filtration:** After extraction, the mixture is filtered to separate the liquid extract from any solid particles or plant material.
6. **Evaporation:** The solvent is then evaporated from the liquid extract, typically using techniques such as rotary evaporation or vacuum distillation. This leaves behind a concentrated extract containing the desired Compounds from the prickly poppy roots.
7. **Purification (optional):** Depending on the intended use of the extract, further purification steps may be performed to isolate specific compounds or remove impurities.
8. **Analysis and Testing:** The final extract may undergo analysis and testing to ensure its quality, potency, and safety for use in various applications.

**KEYWORD:** The keyword for Mexican prickly poppy's antitumor activity is "sanguinarine." Sanguinarine is a benzophenanthridine alkaloid found in Mexican prickly poppy (*Argemone mexicana*) and has been studied for its potential anticancer properties, including its ability to inhibit tumor growth and induce apoptosis (programmed cell death) in cancer cells.

## I. INTRODUCTION

The Mexican prickly poppy, scientifically known as *Argemone mexicana*, is a plant species indigenous to Mexico and widely distributed across tropical and subtropical regions worldwide. Renowned for its diverse medicinal properties, this plant has garnered significant attention in recent years due to its potential antitumor activity. At the forefront of its medicinal arsenal lies a compound called sanguinarine, a benzophenanthridine alkaloid abundant in Mexican prickly poppy. Research has unveiled sanguinarine's remarkable ability to combat tumors, making it a promising candidate in the fight against cancer. Through various studies, sanguinarine has demonstrated its efficacy in inhibiting tumor growth and inducing apoptosis in cancer cells, thus holding immense potential for cancer therapy. In this review, we delve into the intricate mechanisms behind Mexican prickly poppy's antitumor activity, exploring the pharmacological properties of sanguinarine and its implications for cancer treatment. By shedding light on the multifaceted role of this botanical marvel in oncology, we aim to contribute to the Growing body of knowledge surrounding natural remedies for combating cancer And improving human health. The Mexican prickly poppy, scientifically known as *Argemone mexicana*, is a Captivating botanical species deeply rooted in the cultural and medicinal heritage Of Mexico and beyond. With its vibrant yellow flowers and spiny foliage, this Resilient plant thrives in diverse ecosystems, ranging

from arid deserts to tropical Forests. Beyond its ornamental allure, the Mexican prickly poppy has long been Esteemed for its medicinal properties. Traditional healers and indigenous Communities have utilized various parts of the plant for centuries to address an Array of ailments, including skin conditions, respiratory issues, and gastrointestinal Disturbances. Rich in bioactive compounds such as alkaloids, flavonoids, and Saponins, Mexican prickly poppy boasts a pharmacological profile that intrigues Modern scientists and herbalists alike. Its extracts and derivatives have been Investigated for their potential therapeutic applications in pharmacology, Ethnobotany, and biomedicine. Moreover, the Mexican prickly poppy serves as a Symbol of resilience and adaptation, thriving in harsh environments and Embodying nature's capacity to flourish against adversity. As researchers continue To unravel its botanical secrets and explore its pharmacological potential, the Mexican prickly poppy stands as a testament to the enduring bond between Humanity and the plant kingdom, offering both inspiration and healing in equal Measure. Cancer, a formidable adversary to human health, represents a complex constellation of diseases. Characterized by uncontrolled cell growth and proliferation. This aberrant cellular behavior often leads to the formation of malignant tumors, which can invade surrounding tissues and metastasize to distant organs, posing significant challenges to diagnosis, treatment, and prognosis. While cancer encompasses a vast array of malignancies with distinct origins and characteristics, it exerts a profound impact on individuals, families, and societies worldwide. Despite remarkable advancements in cancer research and treatment modalities, this multifaceted disease remains a leading cause of morbidity and mortality globally. The etiology of cancer is multifactorial, with a myriad of genetic, environmental, and lifestyle factors contributing to its development. Understanding the intricate interplay between these factors and the underlying molecular mechanisms driving carcinogenesis is essential for elucidating cancer pathogenesis and devising targeted therapeutic strategies. Over the years, concerted efforts by researchers, clinicians, and policymakers have led to significant strides in cancer prevention, early detection, and treatment. From innovative screening techniques and precision medicine approaches to immunotherapies and targeted therapies, the landscape of cancer care continues to evolve, offering new hope and possibilities for patients and their families. Nevertheless, the battle against cancer remains far from won, underscoring the urgent need for continued research, advocacy, and collaboration across disciplines and borders. By fostering a comprehensive understanding of cancer biology, improving access to quality care, and promoting public health initiatives, we strive to mitigate the burden of cancer and advance towards a future where the specter of this disease no longer looms large over humanity. The pursuit of effective treatments for tumors has been a cornerstone of medical research for decades, spurred by the devastating impact of cancer on individuals and communities worldwide. Anti-tumor therapies encompass a diverse array of approaches aimed at combating tumor growth, metastasis, and recurrence, with the ultimate goal of improving patient outcomes and quality of life. From conventional treatments such as surgery, chemotherapy, and radiation therapy to more recent Innovations in targeted therapy, immunotherapy, and gene therapy, the landscape of anti-tumor Interventions continues to expand and evolve. Each modality offers unique mechanisms of action and therapeutic benefits, reflecting the complexity and heterogeneity of tumors across different cancer types and patient populations. The development of anti-tumor agents relies on a deep understanding of cancer biology and the Molecular pathways driving tumorigenesis. By targeting specific molecular targets or signaling pathways involved in tumor growth and survival, these therapies aim to disrupt cancer progression and induce tumor regression while minimizing harm to healthy tissues. While significant progress has been made in the field of anti-tumor therapy, challenges remain, including treatment resistance, adverse side effects, and the need for personalized treatment strategies tailored to individual patients' genetic and molecular profiles. Moreover, disparities in access to innovative Therapies and healthcare resources underscore the importance of addressing equity and affordability in cancer care. In this ongoing quest to conquer cancer, collaboration between researchers, clinicians, patients, and policymakers is paramount. By harnessing the collective expertise and resources of the global community, we can accelerate the development and delivery of transformative anti-tumor therapies, bringing hope and healing to those affected by this formidable disease.

## II. INFORMATION OF HERBACEOUS PLANT

A. The Mexican prickly poppy, scientifically known as *Argemone mexicana*, is a fascinating flowering plant native to Mexico but also Found in various tropical and subtropical regions worldwide. Here's some information about this distinctive tree:

1. Botanical Description: The Mexican prickly poppy is a member of the Papaveraceae family and is characterized by its spiny leaves, yellow to orange flowers, and prickly seed capsules. It typically grows as an annual or short-lived perennial herbaceous plant, reaching heights of up to 1-2 meters.
2. Habitat: This hardy plant is well-adapted to a wide range of environments, including arid and semi-arid regions, disturbed areas, and along roadsides. It thrives in full sunlight and well-drained soils, often colonizing areas with minimal competition from other vegetation.

3. Cultural Significance: Mexican prickly poppy has been valued for its medicinal properties by indigenous cultures for centuries. Various parts of the plant, including the seeds, roots, and latex, have been used in traditional medicine to treat a range of ailments, such as skin conditions, respiratory disorders, and digestive issues.
4. Chemical Constituents: The plant contains bioactive compounds, including alkaloids, flavonoids, saponins, and terpenoids, with pharmacological properties. Sanguinarine, an alkaloid found in Mexican prickly poppy, has attracted attention for its potential anticancer, antimicrobial, and anti-inflammatory effects.
5. Ecological Impact: While Mexican prickly poppy has medicinal value, it can also be considered invasive in some regions where it Outcompetes native vegetation and disrupts ecosystems. Its ability to thrive in harsh conditions and produce numerous seedsContributes to its spread and persistence in diverse habitats.
6. Cultivation: Mexican prickly poppy can be propagated from seeds and grown in home gardens or as an ornamental plant. However, due to its invasive potential, caution should be exercised to prevent its spread into natural areas where it may displace Native flora. Overall, the Mexican prickly poppy is a resilient and versatile plant with cultural, ecological, and medicinal significance, making it a subject of interest for researchers, gardeners, and conservationists alike.

B. Mexican prickly poppy flowers have several traditional and medicinal uses, although caution is advised as the plant contains toxic compounds. Here are some of the traditional uses:

1. Medicinal Purposes: In traditional medicine, Mexican prickly poppy flowers have been used to prepare herbal remedies for various ailments. These remedies are often applied topically or ingested, although the plant's toxicity makes it risky without proper preparation and dosage.
2. Dyeing: The flowers of Mexican prickly poppy have been used to produce natural dyes for textiles. The vibrant yellow to orange hues extracted from the flowers can be used to color fabrics and other materials.
3. Decorative Purposes: Mexican prickly poppy flowers are sometimes used in floral arrangements and decorations, thanks to their bright colors and unique appearance. They can add a touch of tropical flair to bouquets or floral displays.
4. Cultural and Ritual Use: In some cultures, Mexican prickly poppy flowers hold symbolic significance and may be used in cultural or ritual practices. Their vivid colors and association with resilience and adaptation make them meaningful in various contexts.

While Mexican prickly poppy flowers have historical uses, it's essential to exercise caution due to the plant's toxicity. The consumption or use of any part of the plant for medicinal or other purposes should only be undertaken under the guidance of knowledgeable individuals or healthcare professionals familiar with its properties and potential risks.

C. Preparing a cream using Mexican prickly poppy (*Argemone mexicana*) requires careful consideration due to its potential toxicity However, if you're interested in exploring its topical applications for non-medical purposes, such as skincare, you can create a cream using the following general steps:

1. Harvesting and Cleaning: Gather the Mexican prickly poppy plant, focusing on the leaves and flowers rather than the roots due to their lower toxicity.
2. Thoroughly clean the plant material to remove any dirt or debris.
3. Extraction: Extract the beneficial compounds from the plant material by infusing it into a carrier oil. You can use a gentle heating method to facilitate the extraction process. Common carrier oils for skincare creams include coconut oil, olive oil, or almond oil
4. Straining: Once the plant material has been infused into the carrier oil, strain the mixture to remove any solid particles or plant debris. This will result in a clean oil infused with the properties of the Mexican prickly poppy..
5. Formulation: Combine the infused oil with other skincare ingredients to create a cream formulation. This may include ingredients such as shea butter, cocoa butter, beeswax, or essential oils for fragrance and additional benefits.
6. Emulsification: If necessary, emulsify the oil mixture with water to create a creamy texture. This can be achieved using emulsifying wax or other natural emulsifiers.
7. Preservation: Add natural preservatives such as vitamin E oil or grapefruit seed extract to prolong the shelf life of the cream and prevent microbial growth.
8. Packaging: Transfer the cream into clean, airtight containers suitable for storage. Consider using amber glass jars to protect the cream from light exposure, which can degrade its quality over time.
9. Labeling: Label the containers with the ingredients used and the date of preparation for easy reference.
10. It's important to perform a patch test on a small area of skin before using the cream more broadly to ensure compatibility and avoid potential allergic reactions. Additionally, discontinue use if any adverse reactions occur.

While Mexican prickly poppy has historical uses in traditional medicine, its toxicity should be taken into account when considering its topical applications. Always consult with a healthcare professional before using herbal remedies, especially if you have underlying health conditions or are pregnant or breastfeeding.

### III. PROCEDURE

Creating a topical cream using Mexican prickly poppy roots involves a detailed process to ensure safety and efficacy. Here's a general procedure you might follow.

1. **Harvesting and Cleaning:** Gather fresh Mexican prickly poppy roots, ensuring they are clean and free from dirt or debris. Carefully wash and scrub the roots to remove any remaining soil.
2. **Drying:** Once cleaned, allow the roots to dry thoroughly. This can be done by spreading them out in a single layer on a clean surface and leaving them to air dry in a well-ventilated area away from direct sunlight. Alternatively, you can use a food dehydrator or oven set to a low temperature to speed up the drying process.
3. **Grinding:** Once dried, grind the roots into a fine powder using a mortar and pestle or a spice grinder. Ensure that the powder is uniform in consistency to facilitate extraction of the active compounds.
4. **Extraction:** Place the powdered roots in a clean, dry container and cover them with a suitable solvent, such as ethanol or vegetable oil. Allow the mixture to macerate for several days to extract the bioactive compounds from the roots. Agitate the mixture occasionally to enhance extraction.
5. **Filtration:** After the maceration period, strain the mixture through a fine mesh strainer or cheesecloth to remove the solid particles and plant material. Press or squeeze the mixture to extract as much liquid as possible.
6. **Evaporation:** Transfer the filtered liquid to a clean, shallow dish and allow it to evaporate slowly at room temperature. This will concentrate the extract and remove excess solvent, leaving behind a thick, viscous oil or resin.
7. **Formulation:** Incorporate the concentrated extract into a base cream or ointment formulation. This can be a simple blend of moisturizing ingredients such as shea butter, coconut oil, or beeswax, or a commercial cream base obtained from a supplier.
8. **Mixing:** Heat the cream base gently until it becomes soft and pliable, then add the concentrated extract and mix thoroughly until well combined. You may also incorporate additional ingredients such as essential oils or herbal extracts for fragrance or additional therapeutic benefits.
9. **Cooling and Packaging:** Allow the cream to cool and solidify before transferring it into clean, airtight containers suitable for storage. Label the containers with the ingredients used and the date of preparation for future reference.
10. **Testing:** Perform a patch test on a small area of skin to ensure compatibility and assess for any adverse reactions before using the cream more broadly. Monitor for any signs of irritation or allergic reactions and discontinue use if necessary.

It's important to note that Mexican prickly poppy contains toxic compounds, so care should be taken when handling the roots and preparing the cream. Additionally, consult with a healthcare professional before using any herbal remedies, especially if you have underlying health conditions or are pregnant or breastfeeding.



#### IV. MACANISAM OF ACTION

The mechanism of action of anti-tumor activity can vary depending on the specific compound or Drug being used. However, some common mechanisms include:

1. Apoptosis Induction: Many anti-tumor drugs work by triggering apoptosis, or programmed cell death, in cancer cells. This helps to eliminate cancerous cells from the body.
2. Cell Cycle Arrest: Some drugs inhibit the cell cycle progression of cancer cells, preventing them from dividing and proliferating.

3. **Angiogenesis Inhibition:** Tumors require a blood supply to grow and spread. Drugs that inhibit angiogenesis, the formation of new blood vessels, can starve tumors of oxygen and nutrients, hindering their growth.
4. **DNA Damage:** Certain drugs cause damage to the DNA of cancer cells, leading to their death or making them more susceptible to other treatments.
5. **Targeted Therapy:** Some drugs specifically target molecules or pathways that are overactive in cancer cells, while sparing normal cells. This approach minimizes side effects and can be more effective against certain types of cancer. It's Important to note that these mechanisms can overlap, and many anti-tumor drugs may employ multiple mechanisms to combat cancer.

The mechanism of tumor formation involves a complex interplay of genetic, environmental, and physiological factors. Here's a simplified overview:

1. **Initiation:** Tumor formation often begins with genetic mutations or alterations in certain cells. These mutations can be caused by various factors such as exposure to carcinogens (e.g., tobacco smoke, UV radiation), genetic predisposition, or random errors during DNA replication.
2. **Promotion:** After the initiation stage, tumor-promoting factors can stimulate the growth and proliferation of initiated cells. These factors may include hormones, growth factors, chronic inflammation, or other signals that support the survival and replication of mutated cells.
3. **Progression:** As the tumor grows, it acquires additional mutations and genetic changes that enable it to become more aggressive and invasive. These changes may involve the activation of oncogenes (genes that promote cell growth) and the inactivation of tumor suppressor genes (genes that inhibit cell growth and promote DNA repair).
4. **Angiogenesis:** Tumors require a blood supply to grow beyond a certain size. To facilitate this, they stimulate the formation of new blood vessels through a process called angiogenesis. This ensures a steady supply of oxygen and
5. **Nutrients** to the growing tumor.

**Invasion and Metastasis:** Invasive cancer cells can penetrate nearby tissues and spread to distant sites in the body through the bloodstream or lymphatic system, forming secondary tumors known as metastases. This process, called metastasis, is a hallmark of malignant tumors and is responsible for the majority of cancer-related deaths. Each type of tumor may have unique characteristics and molecular mechanisms driving its growth and progression. Understanding these mechanisms is crucial for developing effective treatments and interventions to combat cancer. Reducing tumor growth and progression involves targeting various aspects of the tumor biology and its microenvironment. Here are some strategies:

1. **Surgery:** Surgical removal of the tumor is often the primary treatment for localized tumors. It aims to physically remove as much of the tumor as possible while sparing surrounding healthy tissue.
2. **Chemotherapy:** Chemotherapy involves the use of drugs to kill or slow the growth of cancer cells. These drugs may be administered orally or intravenously and work by targeting rapidly dividing cells, which are characteristic of many cancer cells. Chemotherapy can be used as a primary treatment or in combination with other therapies.
3. **Radiation Therapy:** Radiation therapy uses high-energy beams to target and destroy cancer cells. It can be used to shrink tumors before surgery, kill remaining cancer cells after surgery, or alleviate symptoms in advanced-stage cancers.
4. **Targeted Therapy:** Targeted therapy drugs are designed to specifically target molecules or pathways that are overactive in cancer cells while sparing normal cells. These drugs can be more precise and have fewer side effects compared to traditional chemotherapy.
5. **Immunotherapy:** Immunotherapy harnesses the body's immune system to recognize and destroy cancer cells. This can be done through various approaches, such as immune checkpoint inhibitors, CAR-T cell therapy, and cancer vaccines.
6. **Angiogenesis Inhibitors:** Drugs that inhibit angiogenesis, the formation of new blood vessels, can help deprive tumors of oxygen and nutrients, slowing their growth and preventing metastasis.
7. **Hormonal Therapy:** Hormonal therapy is used to treat cancers that are hormone-sensitive, such as breast and prostate cancers. It works by blocking the production or action of certain hormones that fuel cancer growth.
8. **Lifestyle Changes:** Adopting a healthy lifestyle can help reduce the risk of cancer and improve treatment outcomes. This includes maintaining a healthy weight, exercising regularly, avoiding tobacco and excessive alcohol consumption, and eating a balanced diet rich in fruits, vegetables, and whole grains.

Treatment approaches are often tailored to the specific characteristics of the tumor, including its type, location, stage, and genetic profile. In many cases, a combination of treatments may be used to achieve the best possible outcome.

Regular monitoring and follow- Up care are also important to assess treatment response and detect any signs of recurrence.



It is a normal tumor



After treatment of cream

## V. CAUSES

The causes of antitumor activity can vary depending on the specific mechanisms involved in a particular treatment or compound. Here Are some common causes of antitumor effects:

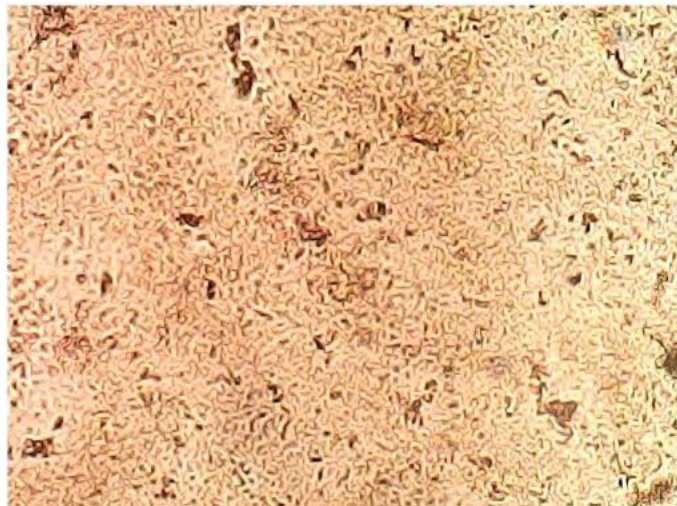
1. **Inhibition of Cell Proliferation:** Antitumor agents may work by inhibiting the growth and proliferation of cancer cells. This can involve targeting specific molecular pathways or signaling mechanisms that regulate cell division and replication.
2. **Induction of Apoptosis:** Many antitumor therapies induce programmed cell death, known as apoptosis, in cancer cells. This process helps eliminate abnormal or damaged cells, preventing tumor growth and progression.
3. **Disruption of Angiogenesis:** Tumors require a blood supply to grow and metastasize. Antitumor agents may inhibit angiogenesis, the formation of new blood vessels, thereby depriving tumors of the nutrients and oxygen they need to survive and thrive.
4. **Enhancement of Immune Response:** Some antitumor therapies stimulate the body's immune system to recognize and attack cancer cells. This can involve activating immune cells such as T cells and natural killer cells or blocking immune checkpoints that inhibit immune responses against tumors.
5. **Targeted Therapy:** Certain antitumor agents are designed to specifically target molecular alterations or abnormalities present in cancer cells while sparing normal cells. This targeted approach allows for more precise and effective treatment with fewer side effects.
6. **DNA Damage and Repair:** Many antitumor agents induce DNA damage in cancer cells, disrupting their ability to replicate and survive.
7. This can involve directly damaging the DNA or interfering with DNA repair mechanisms, leading to cell death.
8. **Mitotic Inhibition:** Some antitumor agents interfere with the process of mitosis, the division of cells, by disrupting the mitotic spindle Or other cellular structures involved in cell division. This prevents cancer cells from dividing and proliferating.
9. **Modulation of Signal Transduction Pathways:** Antitumor agents may interfere with signaling pathways that promote cell survival, growth, and metastasis in cancer cells. By blocking these pathways or altering their activity, these agents can inhibit tumor progression And spread. Overall, the causes of antitumor activity are diverse and multifaceted, reflecting the complex nature of cancer and the various strategies employed to combat it. Combination therapies that target multiple mechanisms simultaneously are often used to enhance Efficacy and overcome resistance in cancer treatment.



**control test**



**standard test**



**drug treated test**



Observation of the strip.

## VI. SYMPTOMS

The symptoms of antitumor activity can vary depending on the specific treatment or therapeutic agent used, as well as individual Factors such as the type and stage of cancer being treated. Here are some common symptoms associated with antitumor activity: activity is a reduction in the size of the tumor. This may manifest

1. Tumor Shrinkage: One of the primary signs of successful antitumor as a decrease in the size of palpable masses, changes in imaging studies (such as CT scans or MRIs), or resolution of symptoms related to tumor compression or invasion of surrounding tissues.
2. Pain Relief: Antitumor therapies can alleviate pain associated with cancer by reducing tumor burden, relieving pressure on Surrounding structures, and targeting nerve pathways involved in pain signaling.
3. Improvement in Symptom: Antitumor activity may lead to improvements in symptoms related to the underlying cancer, such as fatigue, appetite loss, weight loss, and general malaise. Patients may experience increased energy levels and overall well-being as a result of tumor regression and disease control.
4. Decrease in Tumor Markers: For certain types of cancer, blood tests may be used to monitor tumor markers, which are substances produced by cancer cells or released into the bloodstream in response to tumor activity. A decrease in tumor marker levels can indicate a positive response to antitumor therapy
5. Normalization of Laboratory Values: Antitumor therapies may lead to normalization of abnormal laboratory values associated with Cancer, such as elevated levels of liver enzymes, markers of inflammation, or abnormalities in blood cell counts.
6. Side Effects: While antitumor activity is desirable, many cancer treatments can also cause side effects due to their effects on normal Cells and tissues. Common side effects may include nausea, vomiting, fatigue, hair loss, changes in appetite, and alterations in blood cell counts. These side effects are typically managed with supportive care measures and may diminish over time.
7. Immune-related Adverse Events: in the case of immunotherapy, which harnesses the body's immune system to target cancer cells, immune-related adverse events can occur as a result of immune activation. These may include inflammation of organs and tissues, Skin rash, diarrhea, thyroid dysfunction, and other autoimmune-like symptoms. It's important for patients undergoing antitumor therapy to communicate closely with their healthcare providers and report any Symptoms or side effects experienced during treatment. Monitoring for both antitumor activity and treatment-related adverse events allows for timely adjustments to therapy and optimal management of the patient's condition.

## VII. RESULT

The effect of maxican prickly poppy scientific study successfully

## VIII. CONCLUSION

“Antitumor” refers to substance maxican prickly poppy they inhibit or prevent the growth of tumors, which are abnormal masses of tissue resulting from uncontrolled cell division. These can include chemotherapy drugs, immunotherapy agents, targeted therapies, and even certain natural compounds with potential anti-cancer properties.

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