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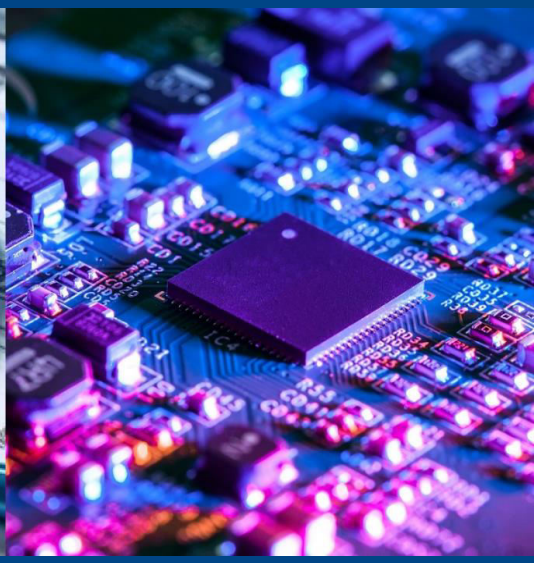

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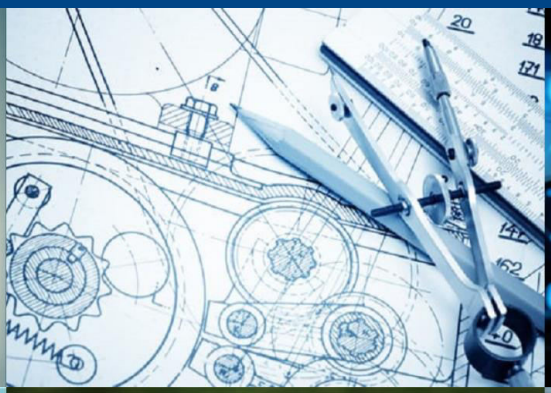

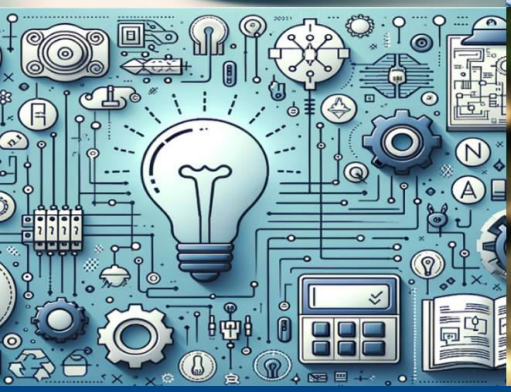

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Phytochemical Screening of Polyherbal Oil Formulation for the Treatment of Arthritis

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ABSTRACT: Arthritis is a common inflammatory disorder characterized by joint pain, swelling, and stiffness. Herbal medicines have gained significant attention due to their safety and minimal side effects compared to synthetic drugs. The present study focuses on the phytochemical screening of selected herbal drugs used in the formulation of a polyherbal oil intended for the management of arthritis. The formulation contains coconut oil, turmeric powder, ajwain powder, ginger juice, camphor, eucalyptus oil, and clove oil. Preliminary phytochemical screening of turmeric (Curcuma longa) and ajwain (Trachyspermum ammi) was performed to identify the presence of bioactive compounds such as alkaloids, tannins, flavonoids, terpenoids, and saponins. The results revealed the presence of several important phytoconstituents responsible for anti-inflammatory and analgesic activities. These findings support the potential therapeutic value of the prepared herbal oil for arthritis management.

I. INTRODUCTION

Arthritis is a chronic inflammatory condition that affects millions of people worldwide. It leads to pain, swelling, stiffness, and reduced mobility in joints. Conventional treatments such as non-steroidal anti-inflammatory drugs (NSAIDs) provide symptomatic relief but are often associated with adverse effects when used for long periods. Therefore, herbal medicines are increasingly preferred as safer alternatives for managing inflammatory disorders.

Polyherbal formulations are widely used in traditional medicine because the combination of different herbs can produce a synergistic therapeutic effect. The present formulation includes coconut oil as a base along with turmeric powder, ajwain powder, ginger juice, camphor, eucalyptus oil, and clove oil. Turmeric contains curcumin which possesses strong anti-inflammatory properties. Ajwain contains thymol which exhibits analgesic and antimicrobial activity. Ginger, clove oil, and eucalyptus oil also contribute to anti-inflammatory and pain-relieving effects.

Phytochemical screening is an important step in herbal drug research. It helps to identify the presence of active chemical constituents responsible for pharmacological activities. Therefore, the present study was carried out to evaluate the phytochemical constituents of turmeric and ajwain used in the herbal oil formulation for arthritis treatment.

II. MATERIALS AND METHODS

Plant Materials

The herbal drugs used in the study were turmeric powder (Curcuma longa) and ajwain powder (Trachyspermum ammi). The materials were obtained from a local herbal store and were cleaned and stored in airtight containers before use.

Extraction Procedure

The powdered herbal drugs were extracted by the decoction method. The powdered sample was mixed with distilled water and boiled gently for about 15–20 minutes. The mixture was allowed to cool and then filtered using muslin cloth or filter paper. The filtrate obtained was used for phytochemical screening.

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Fig no. 1 Extraction process

Phytochemical Screening
The extracts were subjected to preliminary phytochemical tests to detect the presence of major bioactive compounds.

Test for Alkaloids (Mayer's Test)
The extract was treated with Mayer's reagent. Formation of a cream-colored precipitate indicated the presence of alkaloids.

Test for Tannins (Ferric Chloride Test)
Few drops of ferric chloride solution were added to the extract. Development of a blue-black or greenish color indicated the presence of tannins.

Test for Flavonoids (Shinoda Test)
The extract was mixed with magnesium turnings and concentrated hydrochloric acid. Formation of pink or red color confirmed the presence of flavonoids.

Test for Saponins (Foam Test)
The extract was shaken vigorously with distilled water. Formation of stable foam indicated the presence of saponins.

Test for Terpenoids (Salkowski Test)
The extract was mixed with chloroform and concentrated sulfuric acid. Formation of a reddish-brown layer indicated the presence of terpenoids.

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Fig no.2 Phytochemical test of Turmeric

Fig no.3 Phytochemical test of Ajwain

III. RESULTS

S . no	Phytochemical test	Turmeric powder	Ajwain powder
1.	Alkaloids	+ve	+ve
2.	Tannins	+ve	+ve
3.	Flavonoids	+ve	+ve
4.	Terpenoids	+ve	+ve
5.	Saponins	-ve	+ve

Table no.1

The results showed that turmeric and ajwain contain several important phytoconstituents which may contribute to their therapeutic activities.

IV. DISCUSSION

The presence of alkaloids, flavonoids, tannins, and terpenoids in turmeric and ajwain indicates their potential pharmacological importance. Flavonoids and tannins are well known for their antioxidant and anti-inflammatory properties, while terpenoids contribute to analgesic and antimicrobial activities. Ajwain also showed the presence of saponins which possess additional anti-inflammatory effects.

These phytochemicals play a vital role in reducing inflammation and pain associated with arthritis. The combination of these herbal ingredients in oil form may enhance their therapeutic effectiveness through topical application.

V. CONCLUSION

The phytochemical screening confirmed the presence of several bioactive compounds in turmeric and ajwain used in the herbal oil formulation. These phytoconstituents are responsible for anti-inflammatory and analgesic activities which may help in the management of arthritis. Therefore, the formulated herbal oil has potential as a natural and effective remedy for joint pain and inflammation. Further pharmacological and clinical studies are required to establish its therapeutic efficacy.

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