



COMPARING SYZYGIUM AROMATICA AND ZINGIBER OFFICINALE MIXTURE OF ANTHELMINTIC ACTIVITY TO THE COMMERCIAL FORMULATION OF ALBEDANZOLE SUSPENSION

Mahajan Kiran C.^{1*}, Suryawanshi Aditya R.², Kallur Santosh B.³, Shendage Sujata M.⁴, Bhujbal Ashlesha J.⁵, Tembhekar Swaraj B.⁶, Kawade Sarthak C.⁷, Thorve Aditya S.⁸, Dama Ganesh Y.⁹

¹⁻⁸Department of Pharmaceutics, SGMSPM's Sharadchandra Pawar College of Pharmacy, Dumbarwadi (Otur), Tal- Junnar, Dist.- Pune, Maharashtra, India, 410504.

⁹Department of Pharmacognosy, SGMSPM's Sharadchandra Pawar College of Pharmacy, Dumbarwadi (Otur), Tal- Junnar, Dist.- Pune, Maharashtra, India, 410504.

Corresponding Author:*

Dr.Kiran C. Mahajan

Professor,

SGMSPM's Sharadchandra Pawar College of Pharmacy,

Email-kirancmahajan@gmail.com

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ABSTRACT:-

The highly serious parasite illness helminthiasis is brought on by anthelmintic medications, demonstrating their impact on the human body and its normal functions. After doses were administered, the earthworms' paralysis and death time were calculated. The anthelmintic activity of the earthworms revealed that they died and became paralyzed more quickly. We can infer that because earthworms are easy to handle, noticeable, and adaptable to lab settings, they can be employed successfully in anthelmintic activity studies. It is not possible to adjust the evaluation of anthelmintic activity of any medicine under artificial laboratory settings when it is done using isolated worms from nature. The current investigation of anthelmintic activity suggests a novel approach using lab-cultured earthworms. We compared the commercial formulation of *albendazole* suspension with the anthelmintic activity of a combination of *Syzygium aromaticum* and *Zingiber officinales*. The combination of *Syzygium aromaticum* bud powder extract and *Zingiber officinales* powder resulted in a significantly shorter period for the earthworms to become paralyzed and die. This new dose form shows potential as a preventive measure against worm infections in young patients.

KEYWORDS : Earthworms, Albendazole Suspension, *Syzygium aromaticum* and *Zingiber officinales* complex, Anthelmintic, Paralysis

INTRODUCTION:

Helminth infections are among the most common parasite diseases affecting people, affecting a large portion of the world's population, especially youngsters. In developing countries, where they also raise the risk of pneumonia, eosinophilia, anemia, and malnutrition, they pose a serious threat to public health. The World Health Organization believes that two billion people are affected by helminthiasis. It is predicted that 57% of the population in emerging nations will be susceptible by 2025. Many acute and chronic health issues in humans and cattle are now known to be caused by helminth infections. Worm illnesses affect most livestock, and more than half of the world's population is afflicted in some fashion.

In most undeveloped and underdeveloped countries, helminth infections are a serious health problem because they make people more susceptible to other illnesses including bacterial and fungal infections. ^[1-2]

Helminthiasis, another name for worm diseases, is a major public health issue in both industrialized and developing countries, particularly affecting the youth. Intestinal parasitic worms in humans cause infections that affect about 2 billion children globally. The World Health Organization (WHO) predicted that by 2025, about 57% of individuals in underdeveloped countries would have parasitic helminth infections. Though not believed to be the primary parasite affecting children, intestinal worm infections are exceedingly hazardous and should be treated with great caution due to their worldwide frequency in pediatric cases. Currently, the WHO has approved four main anthelmintic drugs to treat intestinal worms: mebendazole, albendazole, pyrantelpamoate, and levamisole.

However, the limitations of these current treatment strategies are that they seldom affect mature worms, which usually spend several years in their host. Moreover, past research has demonstrated that anthelmintic medications may cause side effects such as headaches, nausea, vomiting, diarrhea, and stomach pain. Furthermore, reports of adverse effects have largely highlighted stomach problems, despite the fact that mebendazole and albendazole are regarded to be the most effective drugs for treating pinworm infection. In addition, helminths have developed a resistance to anthelmintic drugs. The increasing resistance to anthelmintic drugs, their adverse side effects, and their inefficiency make other strategies to control intestinal parasitic worms imperative. ^[3]

Syzygium aromaticum, a natural plant of Indonesia, is used in the beverage, pharmaceutical, and kretek cigarette industries. Today, it's farmed in Tanzania, Madagascar, India, the South of China, and other countries. Usually offered with cloves are two main products: dried clove shoots and essential oil extracted from shoots, leaves, or stems. Clove oil has been used as a carminative, antispasmodic, antibacterial, and anthelmintic in traditional Chinese medicine. Clove buds are used to treat diarrhea, dyspepsia, and gastritis. Clove essential oil's main active component is eugenol. ^[4]

It has been established that *Z. officinale* has anti-trematode properties. *Z. officinale* seems to promote a distinct grade of schistosomal efficacy by reducing the amount of *S. mansoni* eggs infected animals' bodies and the size of their hepatic granulomas. Similar research has shown that *Z. officinale* has antischistosomal activities of the blood fluke *S. mansoni* that is borne in mice and provides a foundation for further empirical data and clinical studies. Animals treated with *Z. officinale* had far lower trematode concerns and egg frequencies in their feces than those of control groups. Comparing the gut and liver of treated cases to control mice, histopathological data showed a decrease in the number and width of granulomatous inflammation. According to one theory, *Z. officinale* may have both a peripheral and central mechanism of action, acting as an anticholinergic and an antihistaminic. As a result, *Z. officinale* can be useful in the treatment and prevention of a wide range of illnesses. It can also be used as a chemical medicine substitute. ^[5]

MATERIALS & METHOD:

The powdered ginger and *Syzygium aromaticum* bud were acquired from Shree Dhanvantari Herbals (Pune). Mankind Pharma Pvt. Ltd. was the supplier of the commercially available Albendazole oral suspension IP.

Preparation of extraction :

The raw clove (*Syzygium aromaticum*) bud and powdered ginger root (*Zingiber officinales*) were purchased from Shree Dhanvantari Herbals in the local market in Pune. Using a clean mortar and pestle, the clove bud material and ginger are pounded into a coarse powder after two days of sun drying and observation. The 200g powdered material was percolated with 2500ml of 95% ethanol, ginger, and clove buds for a duration of two weeks. Gathering the extract came after filtration.

An assortment of earthworms:

The collection of earthworm from near Otur, Pune, India, in a swampy area. The size of earthworms varied from 6 to 12 cm. The saline solution is used to wash these earthworms. Human intestinal roundworms and parasites were employed in vitro to assess anthelmintic activity because of their morphological and physiological similarities.

ANTHELMINTIC ACTIVITY EVALUATION BY USING EARTHWORMS :**In powdered *Syzygium aromaticum* buds extracted with ethanol**

In a petriplate containing ten milliliters of the *Syzygium aromaticum*/*Zingiber officinales* mixture ethanolic extract. The ethanolic extract is immersed into these earthworms. These earthworms recorded the beginning and end times of their paralysis.

In commercialized albendazole suspension

Put 10 milliliters of albendazole suspension in a petriplate. The earthworms are submerged in a suspension of albendazole. These earthworms recorded the beginning and end times of their paralysis.

RESULTS AND DISCUSSION:

Six earthworms were gathered and quickly placed in a petri dish shown in Figure 1 that contained an ethanolic extract mixture of powdered *Syzygium aromaticum* buds and powdered *Zingiber officinales*. The earthworms perished in 34 ± 36 seconds, while the average duration for paralysis was 14 ± 16 seconds. The earthworms were dipped in a commercially prepared albendazole suspension that lacked anthelmintic action. The average time for the earthworms to become paralyzed was 90 ± 92 seconds, and they died in 226 ± 228 seconds. The powdered buds of *Syzygium aromaticum* used in ethanolic extract has a higher potency than the commercial product. The ethanolic combination extract of *Syzygium aromaticum* (clove) buds and *Zingiber officinales* (ginger) powder is a herbal medication that is free of adverse effects.



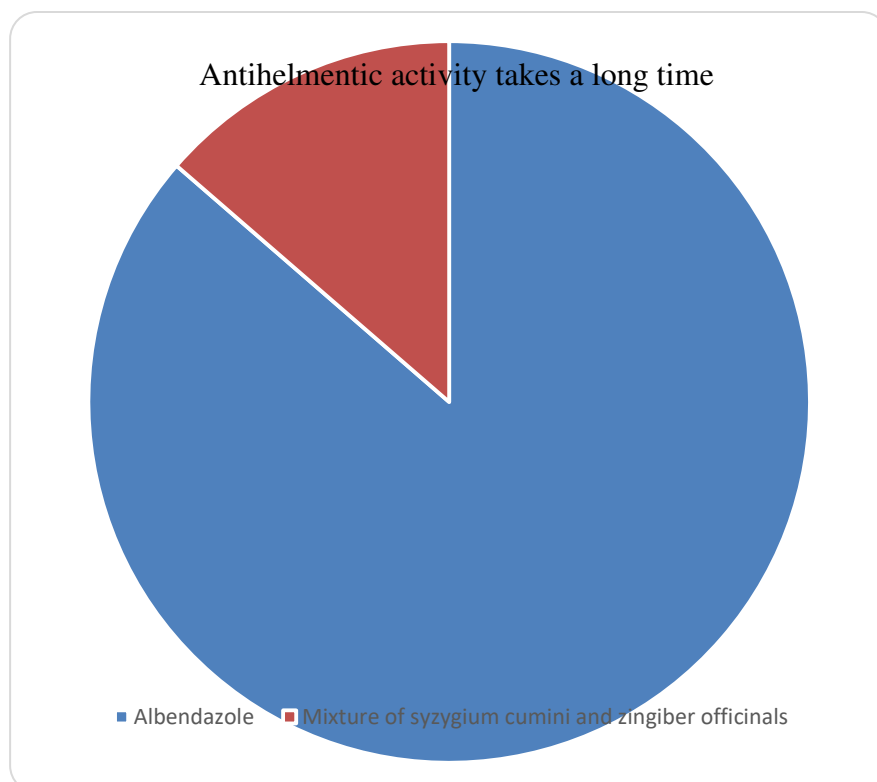
Figure 1: Earthworms in ethanolic extract mixture Syzygiumaromaticum bud powder And Zingiberofficinales powder



Figure 2: Earthworms in Albendazole suspension

Table 1:Comparative study of Herbal suspension and commercial suspension

Time (Sec) Drugs	Started point (Dipped point)	Paralysing started	Fully paralyzed (Died)
Ethanolic extract mixture of Syzygiumaromaticum bud powder and Zingiberofficinales	0 sec	14 ± 16 sec	34 ± 36 sec
Albendazole suspension	0 sec	90 ± 92 sec	226 ± 228 sec



CONCLUSION :

Earthworms can become paralyzed and die from the active chemicals in the ethanolic extract mixture of ginger (*Zingiber officinale*) and clove (*Syzygium aromaticum*) bud powder. When earthworms were paralyzed in an ethanolic extract mixture containing clove bud powder and ginger powder, it took them 14 ± 16 seconds to paralyze and 34 ± 36 seconds to die. In contrast, when albendazole suspension was introduced, it took 90 ± 92 seconds to paralyze and 226 ± 228 seconds to die. Therefore, when compared to commercial formulations of albendazole suspension, the combination of ethanolic extract of *Syzygium aromaticum* bud powder and *Zingiber officinale* powder demonstrated considerable anthelmintic effect on earthworms.

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