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To *In-vitro* Antispasmodic Activity of Aqueous Leaves Extract of *Coriandrum sativum (C. sativum)* Linn. on Chicken Ileum

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Abstract:- ***Coriandrum sativum*** **(C. sativum) is a medicinal plant traditionally known for its antispasmodic properties. In this study, we aimed to evaluate the in-vitro antispasmodic activity of an aqueous extract of C. sativum leaves on the chicken ileum. A tissue bath model was used to determine the potency of the extract in inhibiting acetylcholine-induced contractions. The antispasmodic activity of the extract was compared with that of standard antispasmodic agents such as atropine. Phytochemical analysis was also conducted to identify the active constituents responsible for the antispasmodic activity. The results showed that the aqueous extract of C. sativum leaves exhibited significant antispasmodic activity on the chicken ileum. The extract was found to be more potent than atropine in inhibiting acetylcholine-induced contractions. The phytochemical analysis revealed the presence of alkaloids, flavonoids, and tannins, which may be responsible for the antispasmodic activity of the extract. These findings suggest that C. sativum could be a potential source of antispasmodic agents for the treatment of gastrointestinal disorders associated with increased intestinal spasms.**

Keywords:- *Antispasmodic activity, Coriandrum sativum, Aqueous Extract.*

I. INTRODUCTION

The majority of the world's youngsters typically complain of gastrointestinal issues, which are prevalent sorts of complaints. In addition to gastroenteritis and acute gastrointestinal illnesses, these conditions also include functional abdominal pain, ulcerative colitis, irritable bowel syndrome (IBS), infantile colic, and constipation. Disorders of the digestive system can result in a lower quality of life and a higher risk of anxiety and depression [1]. These conditions are characterized by recurring or persistent abdominal pain, which in IBS may be exacerbated by defecation or relieved by a change in bowel habits [2].Along with symptoms like pain, constipation, or diarrhoea, abnormalities of intestinal movement are also linked to IBS. People who have diarrhoea frequently exhibit symptoms like loose, watery stools [3].

This review provides a thorough explanation of gastrointestinal disorders, their pathogenesis, the use of bioactive substances produce from therapeutic plants, and their antispasmodic potential. We also highlighted a group of 15 traditional medicinal herbs with a variety of compounds and their pharmacological potency diarrhoea, constipation, and indigestion. The first possible explanation is the ostensibly increased risk of GI illnesses that overlap that are connected to reflux. The regurgitation of lower GIT contents into the upper region of the GIT is referred to as reflux. IBS and functional dyspepsia have both been linked to disturbed motility. The link between functional dyspepsia, ulcerative colitis, and IBD and gastro esophageal reflux disease (GERD) has been confirmed by reports from various research [4,5].

Researchers have found that functional dyspepsia, peptic ulcers, and IBS all have fluctuating catecholamine levels. Additionally, other studies have discovered that IBS and colitis have disturbed blood viscosity, which causes an imbalance in myogenic chemo metric auto regulation and the stagnation of the abdominal circulation [6,7].

II. MATERIALS AND METHODS

A. Plant Collection, Authentication and Extraction:

- *Plant material*

The fresh leaves of corriandrum sativum were collected in and around Atpadi, Maharashtra after the authentication by Prof. P. Yadav Department of Botany, Ishwarrao More Patil Arts, Commerce & Science Mahila Mahavidyalaya, Ekta Nagar Dighanchi Atpadi. A voucher specimen has been deposited at the museum of college.

- *Preparation of extract*

Fresh leaves collected were cleaned, and then extracted with water by using Soxhlet's apparatus. Thereafter, the extract was concentrated by flash evaporator. The yield obtained was found to be 18 %. The crude aq. extract was stored in refrigerator below 10^0C for further studies.

B. Isolation of chicken ileum

The hunt for alternative tissues for biological testing was spurred by the current limitations on investigations with laboratory animals. It was suggested to use tissues from animals that are typically consumed as food, such as fish, sheep, goats, and cattle.[8] In 20 tests, we looked at the ileum from chicks sacrificed for food as a potential replacement. Chickens have a lengthy, uniformly sized small intestine. Three times as thick as the longitudinal muscles are the circular muscles. Fresh chicken intestine was obtained from a meat market that was registered with the local government and placed in a flask with 500 cc of "chick" solution before being carried right away to the lab and kept refrigerated. NaCl 118.4 mm, KCl 4.6 mm, CaCl2 2.0 mm, MgCl2 0.5 mm, KH2PO4 1.2 mm, NaHCO3 25 mm, glucose 11.1 mm, and sucrose 13.2 mm make up the chick solution.

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C. Anti-Spasmodic Activity Assay Procedure:-

- First, acetylcholine concentration-dependent responses were recorded using Sherrington's recording drum and a frontal writing lever (at doses of 0.1, 0.2, 0.3, 0.4, 0.5, and 0.6 ml). For proper recording of the reactions in the presence of plane Tyrode's solution as stock-I solution, contact time of 60 sec. and baseline of 30sec time cycle were used.
- The same approach was then used to record the same concentration dependent responses of acetylcholine (Ach) for a stock-II solution that included a blend of Tyrode's solution and coriandrum sativum extract at a concentration of 1 mg/ml.
- Last but not least, the same concentration-dependent responses of Ach for a stock-III solution of a mixture of Tyrode's solution and atropine (as a conventional antispasmodic drug) were seen.

III. OBSERVATIONS AND RESULTS

Effect of Acetylcholine on excised Chicken ileum reflected an increase in spasmodic activity (response) with an increase in dose as shown fig.1

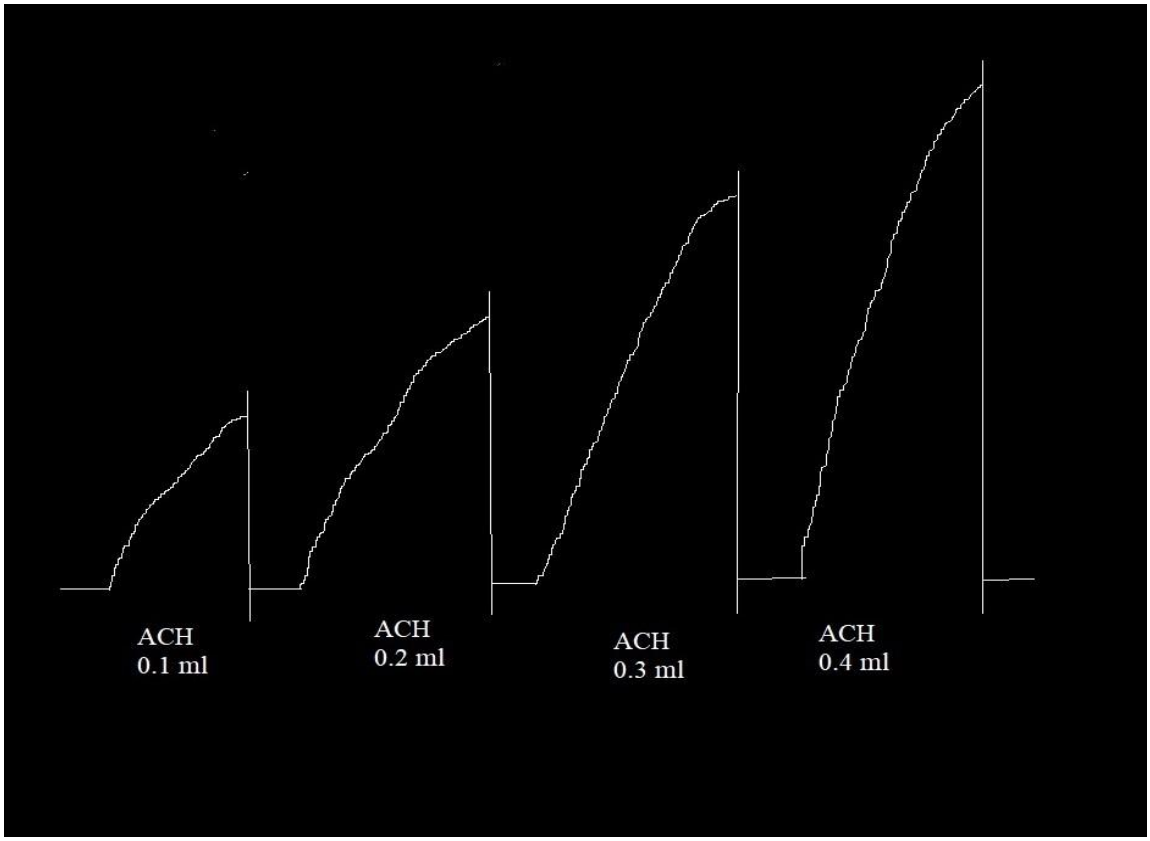

Fig.1: Response Curves of Acetylcholine (Black kymograph)

Table 1: Dose Response Relationship Observations of Acetylcholine

Sr. No	Drug	Dose	Response (cm)
1	Acetylcholine	0.1ML	0.6CM
2		0.2ML	1CM
3		0.3ML	1.5CM
4		0.4ML	1.8CM

Acetylcholine induced spasm followed by treatment of aqueous extract of coriandrum sativum showed prominent antispasmodic activity as depicted in Fig.2

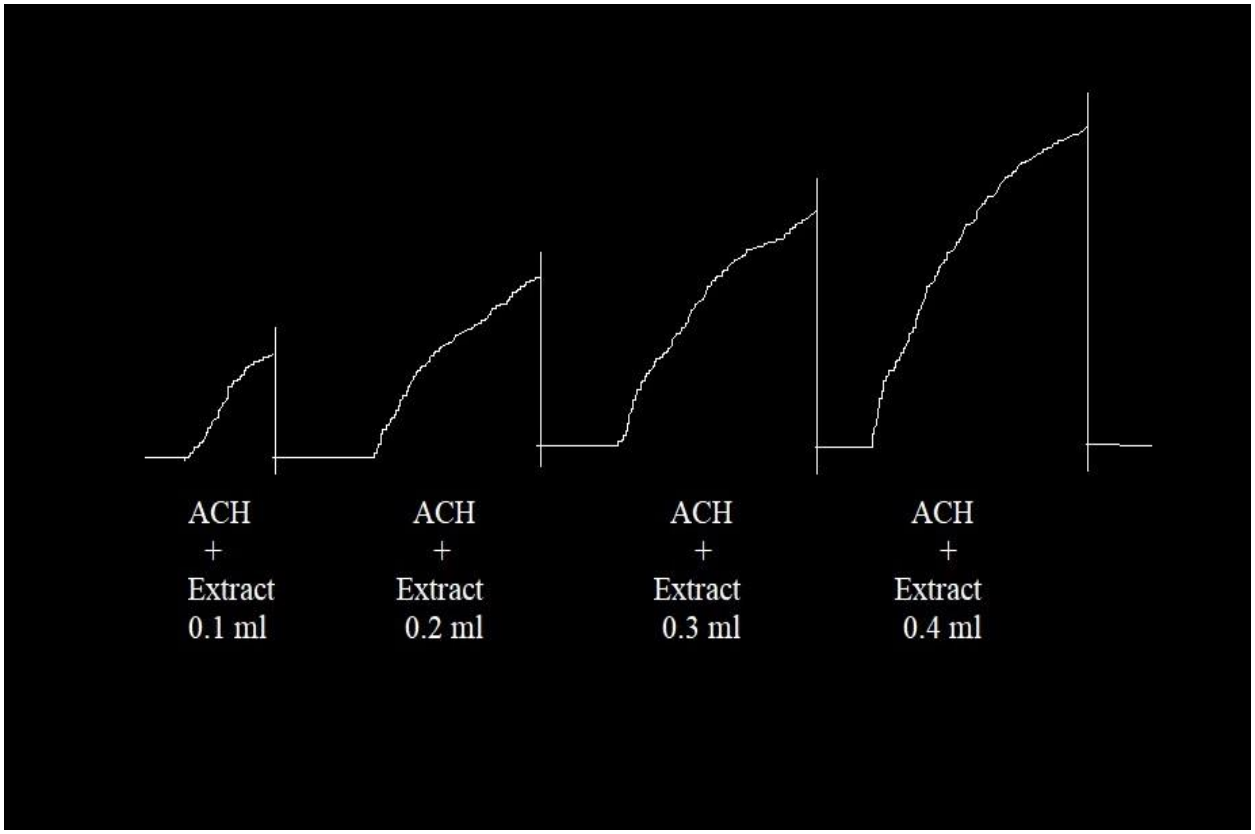

Fig. 2: Response Curves of Acetylcholine + Leaves Extract (Black kymograph)

Table 2: Dose Response Relationship Observations of Acetylcholine and Extract

Sr.No	Drug	Dose	Response (cm)
1	Acetylcholine+ Extract	0.1ML	0.3CM
2		0.2ML	0.5CM
3		0.3ML	0.8CM
4		0.4ML	1CM

Also treatment of aqueous extract of corriandrumsativum showed receptor blocking action (antispasmodic) as that of standard agent on isolated chicken ileum as shown in Fig. No.3.

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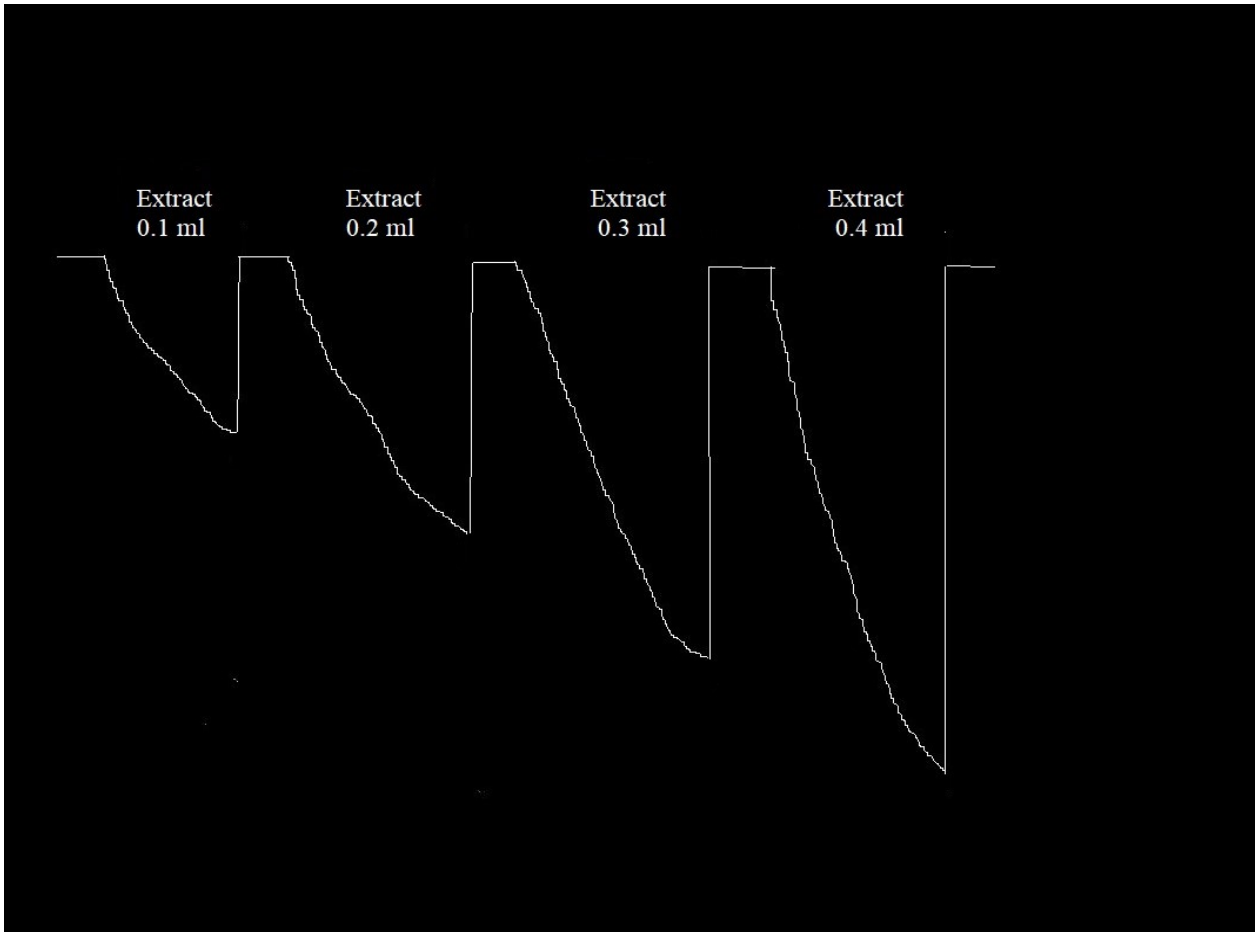

Fig. 3: Response Curves of Leaves Extract (Black kymograph)

Table 3: Dose Response Relationship Observations of Aq. Extract

Sr.No	Drug	Dose	Response (cm)
1	Aq. Extract (coriander)	0.1ML	0.2CM
2		0.2ML	0.5CM
3		0.3ML	0.7CM
4		0.4ML	0.9CM

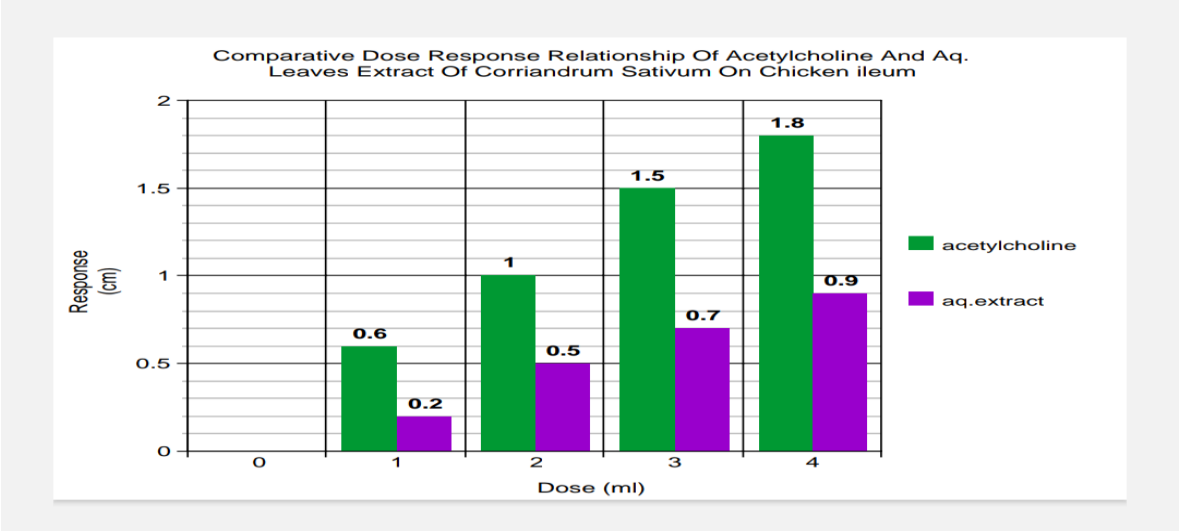

Fig. 4: Comparative dose response relationship of Acetylcholine and aqueous leaves extract of Corriander sativum on excised chicken ileum

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IV. DISCUSSION

According to the findings of the current study, acetylcholine (Ach) alone promotes contraction of the excised chicken ileum; however, when given in combination with an aqueous leaf extract of the plant Corriandru msativum, a substantial reduction in ileal contraction was seen. This shown that Corriandrum sativum aqueous leaf extract has strong spasmolytic (anti-spasmodic) effect by inhibiting cholinergic receptors.

V. CONCLUSION

It was determined from all the data collected during the current investigation that the corriandrum sativum leaf extract in aqueous form displays promising anti-spasmodic action. Also It was discovered that corriandrum sativum has comparatively less powerful spasmolytic efficacy than atropine, a common anti-spasmodic drug. Due to the fact that many anti-spasmodic medications on the market have side effects like urinary hesitancy, urinary retention, mydriasis, tachycardia, blurred vision, and hypersensitivity reactions, Lantana camara, a drug of herbal origin with a high level of safety and efficacy, may be an effective replacement for current medications as well as a new member of the antispasmodic family.

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