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SHORT REOPRT

Analgesic and Anti-Inflammatory Activity of Self Developed Root Canal Irrigant

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ABSTRACT

Endodontic treatment is easily accomplished by the complete removal of the infected nerve of the tooth i.e. diseased pulp and replacing it with the certain specific material. Thus, success or failure of the treatment can be evaluated by proper cleaning & shaping of root canal. Root canal treatment is used to save teeth which would otherwise need to be removed. It is needed when the blood or nerve supply of the tooth known as the pulp is infected through decay or injury. During this treatment one of the major problems is that the patient suffers with a lot of pain and inflammation at the site of injury. To overcome these problems self developed root canal irrigant in the form of gel were employed which posses a good analgesic and anti-inflammatory activity. In the present study efforts were made to formulate root canal irrigant having analgesic and anti-inflammatory activity. The self developed root canal irrigant was evaluated for Anti-inflammatory and Analgesic activities. The result of this study revealed that, the self developed root canal irrigant produced significant Anti-inflammatory and Analgesic activities. Indomethacin and Diclofenac sodium were used as standard drug for anti-inflammatory and analgesic activities respectively.

Keywords: Self developed root canal irrigant, Anti-inflammatory activity, Analgesic activity, Root canal irrigant.

1. INTRODUCTION

The dental chelating material is used for the treatment of root canal in the form of gel. Most of the root canal irrigant in the form of gel was prepared using chelating agent and suitable gel base manufactured in India[1]. Diseased pulp is present inside the tooth. To overcome this problem root canal irrigants in the form of gel were employed[2, 3]. Thus, in root canal treatment the infected part of the tissue is removed, cleaned using root canal irrigant and put back where it came from. Root canal irrigant, irrigates & lubricates the root canal. During the process of root canal treatment the patient suffers from inflammation and terrific pain at the site of treatment. Considering this issue attempts are done to formulate the self developed root canal irrigant from chelating agent and suitable viscosity modifier and water soluble colour which contain pyrazolone nucleus in it's structure which is having antipyretic and analgesic activity[4] insisted us to investigate anti-inflammatory and analgesic activities of the self developed root canal irrigant.

2. MATERIAL AND METHODS:

2.1. Materials:

Self developed root canal irrigant, Carragenin, Indomethacin, Diclofenac Sodium, Plethysmograph were used.

2.2. Study of anti-inflammatory activity:

The anti-inflammatory activity was evaluated by Carrageenan- induced paws edema method.[5,6] The albino rats of either sex were divided into four groups of six animals each. Group I received 0.2 ml of 2% w/v carboxy methyl cellulose suspension orally for 7 days as a control

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group, Group II received 200 mg/kg body weight of self developed root canal irrigant in the form of gel orally for 7 days, Group III received 400 mg/kg body weight of of self developed root canal irrigant in the form of gel orally for 7 days and Group IV received 10 mg/kg of body weight of Indomethacin intraperitoneally for 7 days as a standard drug. Acute inflammation was induced in all groups by injecting 0.1 ml of 1% w/v Carrageenan into the sub-plantar region of the right hind paw of rats. On 7th day, paw volume was measured 1 hr prior to Carrageenan injection using plethysmometer and at 0 and 3 hours after the Carrageenan injection. Mean increase in the paw volume was measured and percent inhibition was calculated by using the following formula.

2.3. Percentage of Inhibition = 100(1-Vt/Vo). where Vt= volume of the treated animals: Vo= volume of the control. The results are shown in table-1 and represented in Graph-1.

2.4. Study of Analgesic activity:

The Analgesic activity was evaluated by *Tail Flick method*. The albino mice were divided into four groups of six animals each. Group I received 0.2 ml of 2% w/v carboxy methyl cellulose suspension orally for 7 days as a control group, Group II received 200 mg/kg body weight of self developed root canal irrigant in the form of gel orally for 7 days Group, III received 400 mg/kg body weight of self developed root canal irrigant in the form of gel orally for 7days, and Group IV received 10 mg/kg of body weight of Diclofenec sodium intraperitoneally for 7 days as a standard drug. The reaction/response time was recorded using Tail Flick analgesiometer at 0, 30, 60, 90, 120 and 180 minutes time interval after the drug administration. The temperature was maintained at 50-55^{0}C and data were recorded. The results are shown in Table-2 and represented in Graph-II.

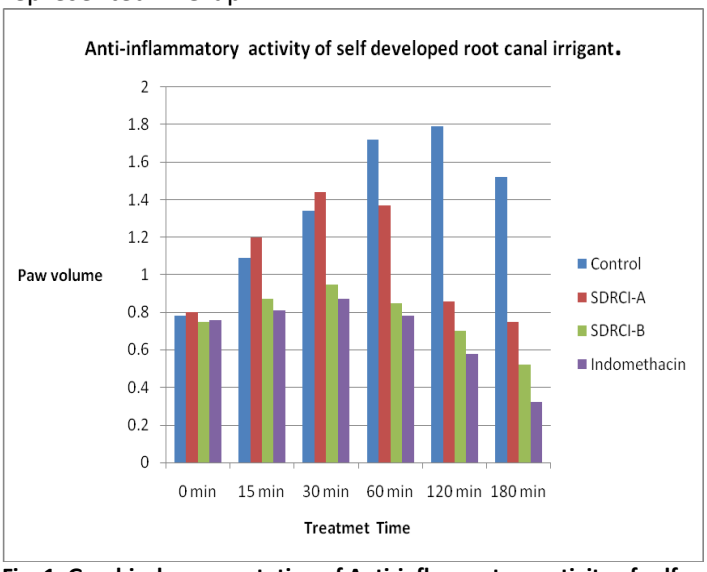

Fig -1. Graphical representation of Anti-inflammatory activity of self developed root canal irrigant.

Treatment	Dose (mg/kg)	Paw Volume (ml) ± SEM 0 min	15 min	30 min	60 min	120 min	180 min	% Inhibition
Control 2% w/v CMC	-	0.78 ± 0.03	1.09 ± 0.11	1.34 ± 0.15	1.72 ± 0.11	1.79 ± 0.11	1.52 ± 0.03	-
SDRCI-A	200	0.80± 0.10	1.20± 0.17	1.44± 0.13	1.37± 0.17	0.86± 0.15	a0.75 ±0.20	50.94
SDRCI-B	400	0.75± 0.11	0.87± 0.14	0.95± 0.11	0.85± 0.15	0.70± 0.14	a0.52 ±0.14	64.20
Indomethacin	10	0.76± 0.10	0.81± 0.12	0.87± 0.11	0.78± 0.15	0.58± 0.17	a0.32 ±005	78.79

Table1: Anti-inflammatory activity of Self developed root canal irrigant on Carrageenan induced paws edema.

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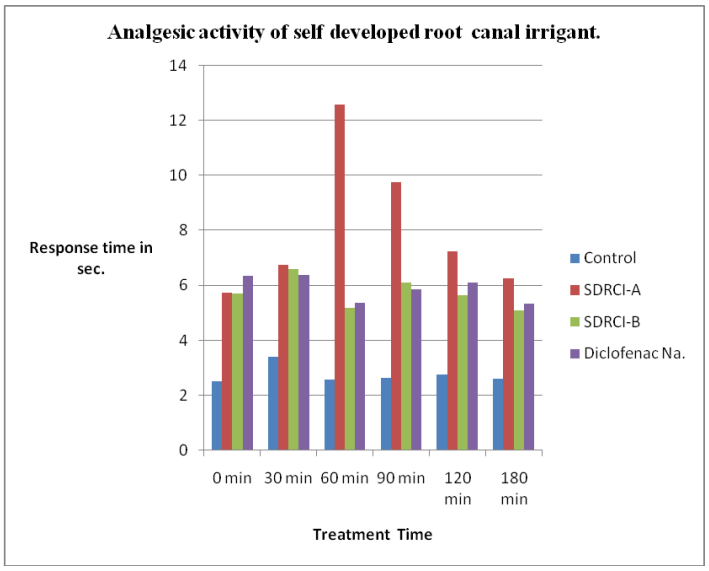

Fig2: Graphical representation of Analgesic activity of self developed root canal irrigant

Treatment	Dose (mg/kg)	Tail Flick method Response time in sec. ± SEM 0 min	30 min	60 min.	90 min.	120 min.	180 min.
Control 0.5% w/v CMC	….	2.53±0.12	3.42±0.10	2.58±0.18	2.65±0.12	2.76±0.17	2.62±0.12
Diclofenec sodium	10	5.75±0.12	6.76±0.12	12.6±0.21	9.75±0.12	7.24±0.12	6.26±0.28
SDRCI-A	200	5.72±0.11	6.60±0.25	5.20±0.25	6.12±0.11	5.65±0.12	5.10±0.10
SDRCI-B	400	6.37±0.12	6.39±0.41	5.38±0.23	5.85±0.11	6.10±0.12	5.35±0.12

Table 2. Analgesic activity of self developed root canal irrigant *by* tail flick method.

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3. DISCUSSION

After the observations of the results obtained, it was concluded that the self prepared dental root canal irrigant possess considerable anti-inflammatory and analgesic activities. Our Pharmacological studies substantiate the use of Self developed root canal irrigant-A and B as a safe and effective root canal irrigant for the treatment of root canal therapy which not only clean the root canal and also reduce the inflammation and pain during the treatment.

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Conflict of Interest: None Declared

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