

CLINICAL EFFECTIVENESS OF ROSA DAMASCENA MILL IN THE MANAGEMENT
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ABSTRACT

Introduction: Rosa Damascena Mill commonly known as Damascus Rose or garland Rose. Flowers of this plant are large and pink colored. Rosa damascena today are one of the highly cultivated flower all over the world, because it is a popular garden plant and for fragrance. In addition to its perfuming effect, Rosa damascena mill also used for medical purposes. **Aims:** To evaluate the effectiveness of medicinal properties of Rosa Damascena mill in the management of Oral mucosal lesions. **Objectives:** ---To find effectiveness of anti-inflammatory. ---To find effectiveness of analgesic. ---To find effectiveness of wound healing. To check the properties of Rosa Damascena Mill in the management of Oro mucosal condition/lesions such as Leukoplakia, Lichen planus, Oral ulcers (Aphthous ulcer minor and Traumatic ulcer) and acute gingivitis. **Materials and Methods:** The prepared rose gel and mouthwash was applied on those patients who were reported and diagnosed with Leukoplakia, Lichen planus, Aphthous Ulcers, Traumatic Ulcers and Acute gingivitis in the Department of Oral Medicine and Radiology, KSR Institute of Dental Science and Research, Tiruchengode. 10 patients were selected for each category. The lesion size, signs and symptoms were recorded at the interval of 1,5 and 10th day. Gingival index were taken at the interval of 1st, 5th and 10th day. The recorded data were analysed with the help of Windows SPSS 16 version .Data obtained were expressed as mean SEM. Differences between groups were statistically analysed by one-way analysis of variance(ANOVA) followed by Duncan as the Post Hoc test. Significance was defined at p<0.05 level. **Results:** This study confirmed the analgesic, anti-inflammatory and wound healing properties of Rosa damascena mill. It also confirmed that it's limited effect on Leukoplakia and Lichen planus. The observed results showed that there was no effective changes in the sizes of the Leukoplakia (p values =1) and Lichen planus (p values =0.9). In the Oral Ulcers (aphthous minor and traumatic ulcers), there was significant (p =0.4) changes in the size of the ulcers. This shows that the effectiveness of anti inflammatory and wound healing tendency of R.Damascena Mill. During the treatment period patients also reported that, there was significant reduction in the burning sensation and pain after application of the gel and mouthwash. It also proves the presence of analgesic property of R.Damacina Mill. In acute gingivitis, bleeding tendency and inflammatory signs were reduced. The results showed that inflammatory tendency gradually reduced with the duration of the application. The data analysis also showed that p value as significant (p= 0.2). **Conclusion:** This study proved that the medicinal properties of R.Damascena mill could be utilized to treat the inflammatory conditions of oromucosal lesions.

KEYWORDS: Rosa Damascena Mill, Anti-Inflammatory, Analgesic, Wound Healing.

INTRODUCTION

Rose is a common name given to the thorny shrubs and climbing vines of the genus Rosa in the Rosaceae family. Roas Damascena Mill is one of the important plant among the more than 100 Rosa species.^[1,2] Rosa damascena Mill is an erect shrub 1–2 m in height and flowers of this plant are large, showy and colorful.^[3] Rosa damascena today are highly cultivated all over the world, because it is a popular garden plant and for

fragrance.^[4] In addition to its perfuming effect, flowers, petals and hips (seed-pot) of Rosa damascena are used for medical purposes.^[5,6]

AIMS

To evaluate the effectiveness of medicinal properties of Rosa Damascena mill in the management of Oro mucosal lesions/conditions.

OBJECTIVES

---To find effectiveness of anti-inflammatory.
 ---To find effectiveness of analgesic.
 ---To find effectiveness of wound healing properties of Rosa Damascena Mill in the management of Oro mucosal condition/lesions such as Leukoplakia, Lichenplanus, Oral ulcers (Apthous ulcer minor and Traumatic ulcer) and acute gingivitis.

MATERIALS AND METHODS

Materials: Rose oil, Mouth mirror, Williams probe, Divider and measurement scale.

Method: This study was undertaken to check the medicinal values of this plant specifically the anti-inflammatory, analgesic and wound healing property in the oral mucosa. Substances with unproven medical effects are usually provided as topical agents to minimize side effects. In order to stabilize their medical effect on the wound site, topical agents are usually prepared with ointment base. For this study commercially available Rose oil used. According to the manufacturer rose oil was derived from dried petals by steam distillation method^[7] and it was converted into mouthwash and gel form for the application convenience in JSS College of Pharmacy, Ooty. (Image 1&2).

This study was conducted in KSR Institute Dental Science and Research, Tiruchengode. Patients reported to the department of Oral medicine, Diagnosis and Radiology were screened and 10 patients were selected in each category with the diagnosis of Leukoplakia, Lichen planus, Aphthous ulcer minor, Traumatic ulcer and acute gingivitis. For each category 10 patients were included and follow up made after 10 days. The signs and symptoms and the size of the lesion were recorded at the interval of 1, 5 and 10th day (Tables 1, 2, 3 & 4).

Before the application of the mouth wash and gel the size of the lesions were measured (Image 3, 4 & 5) and charted. This was carried out on 5th and 10th day also. For acute gingivitis (Image:6) patients were evaluated in the department of Periodontia with help of their professor in KSR Institute of dental science and research and the reading were charted on 1, 5 & 10th day. For this LOE & SILLNESS index was used.

After initial charting patients were asked to apply the mouth on the lesion/condition 3-4 times/day and leave it for 10-15 minutes before gargling. Similarly, patients were advised to gargle mouthwash 2 times a day. The recorded data were analysed with the help of Windows SPSS 16 version. Data obtained were expressed as mean SEM (Table: 5). Differences between groups were statistically analysed by one-way analysis of variance (ANOVA) followed by Duncan as the Post Hoc test. Significance was defined at $p < 0.05$ level.

RESULTS

This study confirmed the analgesic, anti-inflammatory and wound healing properties of Rosa damascena mill. It also confirmed that it is limited effect on Leukoplakia and Lichen planus. The observed results showed that there was no effective changes in the sizes (TABLE: 1 and 3) of the Leukoplakia (p values = 1) and Lichenplanus (p values = 0.9).

In the Oral Ulcers (aphthous minor and traumatic ulcers), there was significant ($p = 0.4$) changes in the size (TABLE: 2) of the ulcers. This shows that the effectiveness of anti inflammatory and wound healing tendency of R. Damascena Mill. During the treatment period, patients also reported that, there was significant reduction in the burning sensation and pain after application of the gel and mouthwash. It also proves the presence of analgesic property of R. Damascena Mill.

In acute gingivitis, condition the bleeding tendency and inflammatory signs were reduced (TABLE: 4). The results show that inflammatory tendency gradually reduced with the duration of the application. The data analysis also shows that p value as significant ($p = 0.2$).

Post hoc test were run to confirm where the difference occurrences between groups. It showed that Lichen Planus is statistically significant with Ulcer, Gingival Index but not Leukoplakia; Ulcer is statistically significant with Leukoplakia and Lichen Planus; Leukoplakia is statistically significant with Ulcer and Lichen Planus; Gingival Index is statistically significant with Ulcer, Leukoplakia and Lichen Planus. It showed overall statistically significant between groups. (statistically significant One way ANOVA).

Table: 1. Size of Lichenplanus (in Cms).

	Day 1	Day 5	Day 10
1	2X 3.2 = 6.4	2X 3.2 = 6.4	2X 3.2 = 6.4
2	1.4X 3.9 = 5.46	1.4X 3.9 = 5.46	1.3X 3.7 = 4.81
3	1.2X 2.7 = 3.24	1.2X 2.9 = 3.48	1.2X 2.9 = 3.48
4	2.2X 3.7 = 8.14	2.2X 3.7 = 8.14	2X 3.4 = 6.28
5	2.3X 3.6 = 8.28	2.3X 3.6 = 8.28	2.3X 3.8 = 8.74
6	1.2X 3.3 = 3.96	1.2X 3.3 = 3.96	1.2X 3.3 = 3.96
7	1.2X 3.6 = 4.32	1.2X 3.6 = 4.32	1.3X 3.7 = 4.81
8	1.4X 4.3 = 6.02	1.4X 4.3 = 6.02	1.4X 4.1 = 5.74
9	1.3X 3.6 = 4.68	1.3X 3.6 = 4.68	1.3X 3.6 = 4.68
10	2.2X 3.8 = 8.36	2.2X 3.8 = 8.36	2.1X 3.7 = 7.77

Table. 2: Size of Ulcers (in Cms).

	DAY 1	DAY 5	DAY 10
1	0.8X1.2 = 0.96	0.6X1.1 = 0.66	NIL
2	0.9X1.2 = 1.2	0.7X1.0 = 0.7	NIL
3	0.5X0.7 = 0.35	0.3X0.5 = 0.15	NIL
4	0.4X0.6 = 0.24	0.2X0.4 = 0.08	NIL
5	0.2X0.6 = 0.12	0.1X0.1 = 0.01	NIL
6	0.2X0.3 = 0.06	0.2X0.3 = 0.06	NIL
7	0.1X0.3 = 0.03	0.1X0.3 = 0.03	NIL
8	0.2X0.4 = 0.08	0.2X0.3 = 0.06	NIL
9	0.1X 0.3 = 0.03	0.1X0.2 = 0.02	NIL
10	0.2X0.3 = 0.06	0.2X0.3 = 0.06	NIL

Table. 3. Size of Leukoplakia (in Cms).

	DAY 1	DAY 5	DAY 10
1	3x2 = 6	3x2 = 6	3x2 = 6
2	1x3 = 3	1x3 = 3	1x3 = 3
3	2.5x1.5 = 3.75	2.5x1.5 = 3.75	2.5x1.5 = 3.75
4	3x4 = 12	3x4 = 12	3x4 = 12
5	4x2 = 8	4x2 = 8	4x2 = 8
6	2x1 = 2	2x1 = 2	2x1 = 2
7	4x2 = 8	4x2 = 8	4x2 = 8
8	1x1.5 = 1.5	1x1.5 = 1.5	1x1.5 = 1.5
9	2x1 = 2	2x1 = 2	2x1 = 2
10	3x2 = 6	3x2 = 6	3x2 = 6

Table. 4: Gingival Index.

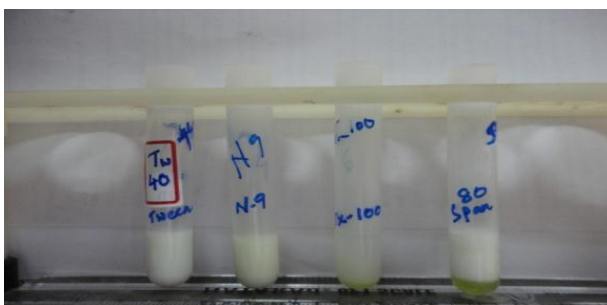
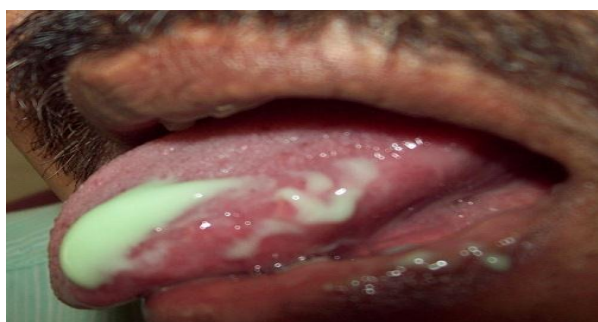
	Day 1	Day 5	Day 10
1	2.4	2.2	2
2	2	1.9	1.7
3	2.3	2.2	2
4	1.7	1.5	1.4
5	1.4	1.3	1.2
6	2.3	2.2	2
7	1.3	1	1
8	1.9	1.5	1.2
9	2.5	2.3	2.1
10	1.5	1.3	1.1

Table. 5.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
						Lower Bound
Day1	Lichen planus	10	5.8860	1.88602	.59641	4.5368
	ulcer	10	.3130	.42056	.13299	.0122
	Leukoplakia	10	5.2250	3.40435	1.07655	2.7897
	Gingival index	10	1.7500	.34400	.10878	1.5039
Day5	Lichen planus	10	5.9100	1.84979	.58495	4.5867
	ulcer	10	.1830	.26495	.08379	-.0065
	Leukoplakia	10	5.2250	3.40435	1.07655	2.7897
	Gingival index	10	1.6300	.42177	.13337	1.3283
Day10	Lichen planus	10	5.6670	1.66414	.52625	4.4765
	ulcer	0
	Leukoplakia	10	5.2250	3.40435	1.07655	2.7897
	Gingival index	10	1.4800	.39665	.12543	1.1963

Table: 6. Anova.

		Sum of Squares	df	Mean Square	F	Sig.
Day1	Between Groups	217.175	3	72.392	18.752	.000
	Within Groups	138.977	36	3.860		
	Total	356.152	39			
Day5	Between Groups	230.064	3	76.688	20.103	.000
	Within Groups	137.334	36	3.815		
	Total	367.399	39			
Day10	Between Groups	105.838	2	52.919	10.936	.000
	Within Groups	130.646	27	4.839		
	Total	236.484	29			

**Image. 1.****Image. 2.****Image. 3: Lichen Planus in Tongue.****Image. 4: Application of Rose gel over Lichen Planus.****Image. 5: Application of rose gel in gingivitis patient.**

DISCUSSION

Most of the modern medicines are based on the synthetic derivatives of plants. Since these derivatives are having their own adverse effects, the major pharmaceutical companies started to do research in herbs as an alternative or complementary to them. One among such plant is *R.Damacena Mill*. It's being used since longtime for its medicinal properties such as anti inflammatory, analgesic and wound healing.^[8]

The analgesic effect: Traditionally *R.Damascena Mill* is being used for the treating of gastritis in Ayurveda in the form of gulkhand. The recent invitro studies in the animals proved that *R.Damacena Mill* is having tendency of analgesic activity.^[9,10]

In our study patients reported that there was reduction in the burning sensation and pain in the ulcers and some of the patients in the Lichen planus(3 out of 5) after the application of mouth wash and gel. This confirms that the analgesic effectiveness of *R.Damascena Mill* on the Oral mucosa. It's far with the previous studies. According to the previous studies this analgesic effect is due to the presence of non water soluble ingredients such as Quercetin and Kaempferol in *R.Damascena Mill*.^[11]

The anti-inflammatory effect: Previous studies have shown that *R.Damascena Mill* is having anti-inflammatory property.^[10,13] In this study, inflammatory activities such as pain, swelling and erythematous appearance were reduced after the application of the mouth wash and gel in the patients with Oral ulcers,

acute gingivitis and in some patients with Lichen planus (Table: 6).

This indicates the anti-inflammatory effectiveness of *R.Damascena* Mill in the Oral mucosa. Patients also reported that reduction in the pain and the burning sensation. On the clinical examination, it has been that the was reduction in the inflammatory signs (Table: 1, 2 and 4).

P value (0.00) also shows significance of the study. As per the previous studies the phenolic component of *R.Damacena* Mill is having tendency of anti-inflammatory effects^[11,12,13] and additional content of vitamin C plays a role in reduction of edema.

Wound healing tendency

Wound healing is a complex process that requires the collaboration of many tissues, cells and different cytokines. During this process, the predominant cells or cytokines change during the various phases of wound healing. Because of this complex process, it is not easy to investigate wound healing and associated factors because in vitro tests are not always reproducible in vivo. Epidermal growth factor (EGF) is known to stimulate wound healing.^[14] It promotes wound healing by increasing the rate of epidermal proliferation and accelerating the level of wound contraction related to myofibroblast proliferation and collagen deposition. It is also essential in the regulation of differentiation, proliferation, and survival of cells.

Most of the researches on wound healing has focused on growth factors, and several growth factors have been identified as potential mediators of wound healing. Growth factors like Platelet-derived growth factor (PDGF), fibroblast growth factor (FGF), transforming growth factor (TGF), epidermal growth factor (EGF), and vascular endothelial growth factor (VEGF) have been reported plays key role in the wound healing process.^[14,15]

Directly applying these growth factors to wounds has several limitations and growth factors have a short half-life, are expensive to manufacture and difficult to deliver.

Yang woo K and his associates found that *R.Damacena* is having tendency of wound healing by initiating growth factor release.^[19] Similarly few more studies such as mouthwash containing *R. damascena* showed treatment effects on recurrent aphthous stomatitis^[16] and an animal study of New Zealand rabbit ear wounds, alcoholic fractions of *R. damascena* accelerated the epithelialization of the wounds^[15] have demonstrated wound healing tendency.

In our study, the size of Oral ulcers progressively reduced after regular application of the mouth wash and gel (Table:2) ($p=0.4$). The reduction in the sizes of the

ulcers showed changes occurred after periodical examinations. This result coincide with the other results. The specific components that supposedly promote wound healing were not evaluated. A single component or combination of β -citronellol, nonadecane, geraniol, nerol, and kaempferol may be responsible for the effects.^[14] It is recommended that further research required to elucidate this issue.

CONCLUSION

The main advantages of using herbs are easy availability, cost effectiveness and less toxicity. Herbs are widely used in dentistry for the purpose of anti inflammation, analgesic, antibacterial and acceleration of wound healing. They also aid in healing and are effective in controlling microbial plaque in gingivitis and periodontitis and thereby improving immunity. With these results, *R.Damacena* Mill showing promising hope which needs more clinical trials to evaluate biocompatibility and safety factor before they can be used for clinical purpose conclusively.

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