



**International Journal of Biology, Pharmacy  
and Allied Sciences (IJBPAS)**

*'A Bridge Between Laboratory and Reader'*

[www.jibpas.com](http://www.jibpas.com)

---

---

## PHARMACEUTICAL AND ANALYTICAL STUDY OF NALPAMARADI TAILA

HUSSAIN MA<sup>1</sup> AND HUSSAIN G<sup>2\*</sup>

- 1: III Year BAMS Student, Sri Dharmasthala Manjunatheshwara College of Ayurveda & Hospital, Hassan
- 2: Professor, Dept. of Rasashastra & Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda & Hospital, Hassan

\*Corresponding Author: Dr. Gazala Hussain: E Mail: [drgazalahussain@sdmcahassan.org](mailto:drgazalahussain@sdmcahassan.org)

Received 10<sup>th</sup> June 2025; Revised 15<sup>th</sup> July 2025; Accepted 4<sup>th</sup> Oct. 2025; Available online 1<sup>st</sup> July 2026

<https://doi.org/10.31032/IJBPAS/2026/15.7.10304>

### ABSTRACT

Ayurveda pharmaceuticals deals with Panchavidha kashaya kalpana (fundamental preparations) and various preparations like avaleha (confections), sneha (oil and ghee preparations), vati (tablet), sandhana kalpana (fermentation products), etc. that add to the vast compendium of formulations that have more shelf life. There are different dosage forms with the aim to increase therapeutic efficacy, palatability and shelf life. Sneha kalpana is a dosage form used for both internal and external administration for treatment with wide therapeutic application. Nalpamaradi taila is a commonly used preparation that is indicated for various skin ailments. The physico chemical and Gas Chromatography and Mass Spectrometry (GCMS) analysis of the oil was carried out to set standards of the formulation.

**Keywords: Nalpamaradi Taila, analysis, GCMS, formulation, standard**

### INTRODUCTION

Ayurveda pharmaceuticals deals with preparations of formulations for various disorders. One such dosage form is taila.

Nalpamaradi taila is a commonly used preparation that is indicated for various skin ailments like Tvagroga (Skin disease),

Visarpa (Erysipelas), Kushtha (Diseases of skin), Pama (Eczema), Kandu (Itching), Pidaka (Boil/Carbuncle), etc. [1] It is a very commonly practiced formulation and research work has shown that it is useful in psoriasis [2].

## MATERIALS AND METHODS

The raw drugs required for the preparation of medicine were procured from local market, authenticated and prepared in Dept. of Rasashastra & Bhaishajya Kalpana, SDMCAH, Hassan.

Table 1: Ingredients of Nalpamaradi Taila [3]

Sl. No.	Ingredient	Latin name	Part used	Quantity
1	Paimanjal rasa (Haridra)	Juice of <i>Curcuma longa</i>	Rhizome	1.536 l
2	Parpata- rasa	Juice of <i>Fumaria parviflora</i>	Whole plant	1.536 l
3	Tila taila	Oil of <i>Sesamum indicum</i>	Seed oil	768 ml
4	Nyagrodha	<i>Ficus benghalensis</i>	Stem Bark	15 g
5	Udumbara	<i>Ficus racemosa</i>	Stem Bark	15 g
6	Ashvattha	<i>Ficus Religiosa</i>	Stem Bark	15 g
7	Plaksha	<i>Ficus lacor</i>	Stem Bark	15 g
8	Haritaki	<i>Terminalia chebula</i>	Pericarp	15 g
9	Bibhitaka	<i>Terminalia bellirica</i>	Pericarp	15 g
10	Amalaki	<i>Embllica officinalis</i>	Pericarp	15 g
11	Candana (Raktacandana)	<i>Santalum album</i>	Heart Wood	15 g
12	Sevya (Ushira)	<i>Vetiveria zizanioides</i>	Root	15 g
13	Kushtha	<i>Saussurea lappa</i>	Root	15 g
14	Covvalli (Manjishtha)	<i>Kaempferia galanga</i>	Root	15 g
15	Coraka	<i>Angelica glauca</i>	Rhizome	15g
16	Agaru	<i>Aquilaria agallocha</i>	Heart Wood	15g

### Preparation of Nalpamaradi taila:

Materials: Tila taila, Cotton cloth, Weighing machine, Beaker, Gas-stove

Nalpamaradi taila was prepared by following guidelines of Sneha Kalpana given in AFI. Kalka of the above said drugs was prepared, Tila taila (sesame oil) and juice of Parpata-rasa and Haridra was used as Drava Dravya (liquid media). Taila was prepared on medium heat till Siddhi lakshana (test of perfectness) such as froth appearance, devoid of moisture, desired colour, odour and taste of drug were

observed. Then the taila was filtered, and collected for further use.

Sample was analysed using following parameters as per the references available in protocol for testing published by CCRAS [4].

1. Organoleptic characters: Organoleptic characters of the text sample were documented by means of examination using sense organs. The colour, odour, consistency of the sample was documented

2. Physico - chemical parameters: pH, viscosity, Specific gravity, TSS, Refractive index of the taila was analysed as per the

standard protocol mentioned for analysis in Protocol of testing of Ayurveda, Siddha and Unani drugs as said by CCRAS was carried.

### 3. GCMS

#### GCMS:

Procedure: The Clarus 680 GC was used in the analysis employed a fused silica column, packed with HP-5MS (5% biphenyl 95% dimethyl polysiloxane, 30 m × 0.25 mm ID × 250µm df) and the components were separated using Helium as carrier gas at a constant flow of 2 ml/min. The injector temperature was set at 250°C during the chromatographic run. The 1µL of extract sample injected into the instrument the oven temperature was as follows: 50 °C (2 min); followed by 150 °C at the rate of 15 °C min<sup>-1</sup>; and 150 °C, where it was held for 1min and then followed by 240°C at the rate of 25°C min<sup>-1</sup>; it was held for 12.00 min. The mass detector conditions were: Inlet line

temperature 250 °C; ion source temperature 230 °C; and ionization mode electron impact at 70 eV, a scan time 0.2 sec and scan interval of 0.1 sec. the fragments from 40 to 600 Da. The spectrums of the components were compared with the database of spectrum of known components stored in the GC-MS NIST (2014) library.

### OBSERVATIONS AND RESULTS

#### Pharmaceutical study

Preparation of kalka churna: Raw drugs were taken and powdered in khalwa yantra to get fine powder which was again sieved by using sieve no.10. The quantity of drugs taken was 260 g and 195g was obtained, indicating a loss of 65g.

Taila preparation: The kalka added for oil preparation was soft, unctuous, and black in colour. 690 ml of oil was obtained after the paka.

#### Analytical study

Table 2: Organoleptic characters

Parameters	Observations
Colour	Yellow
Odour	Characteristic
Touch	Oily

Table 3: Result of Physico chemical analysis

Parameters	Results
pH	3.696
Specific gravity	0.92
Viscosity	0.565
TSS	79
Refractive index	1.478

## Result of Gas Chromatography and Mass Spectrometry of Nalparadi Taila

Table 4: GC-MS of Nalparadi Taila at RT- 14.0

Peak Number	Name of the component	Formula	Match factor	CAS#	Probable %
1	AR-Turmerone	C <sub>15</sub> H <sub>20</sub> O	796	532-65-0	97.2%
2	AR-Turmerone	C <sub>15</sub> H <sub>20</sub> O	777	532-65-0	97.2%
3	Cinnamyl angelate	EC <sub>14</sub> H <sub>16</sub> O <sub>2</sub>	571	-	0.97%;
4	Verbenyl angelate, cis-	C <sub>15</sub> H <sub>22</sub> O <sub>2</sub>	563	-	0.72%
5	(E)- $\gamma$ -Atlantone	C <sub>15</sub> H <sub>22</sub> O	537	108549-47-9	0.21%
6	Benzene, 1-(1,5-dimethyl-4-hexenyl)-4-methyl-	C <sub>15</sub> H <sub>22</sub>	511	644-30-4	0.06%
7	Carvyl tiglate, cis-	C <sub>15</sub> H <sub>22</sub> O <sub>2</sub>	510	-	0.06%
8	Phenyl angelate, 2-(1Z)-propenyl-	C <sub>14</sub> H <sub>16</sub> O <sub>2</sub>	510	-	0.06%
9	Benzene, 1-(1,5-dimethyl-4-hexenyl)-4-methyl-	C <sub>15</sub> H <sub>22</sub>	507	644-30-4	0.06%
10	(Z)- $\gamma$ -Atlantone	C <sub>15</sub> H <sub>22</sub> O	505	108549-48-0	0.05%

Table 5: GC-MS of Nalparadi Taila at RT- 14.3

Peak Number	Name of the component	Formula	Match factor	CAS#	Probable %
1	2-Methyl-6-(4-methylenecyclohex-2-en-1-yl)hept-2-en-4-one	C <sub>15</sub> H <sub>22</sub> O	841	82508-14-3	56.1%
2	Curlone	C <sub>15</sub> H <sub>22</sub> O	832	87440-60-6	40.8%
3	Bicyclo[3.3.1]non-2-en-9-ol, syn-	C <sub>9</sub> H <sub>14</sub> O	684	19877-78-2	1.17%
4	(E)-N-(4-Hydroxyphenethyl)-2-methylbut-2-enamide	C <sub>13</sub> H <sub>17</sub> NO <sub>2</sub>	671	457628-81-8	0.75%
5	$\alpha$ -Benzylphenethylamine	C <sub>15</sub> H <sub>17</sub> N	640	-	0.20%
6	4-tert-Butoxystyrene	C <sub>12</sub> H <sub>16</sub> O	632	95418-58-9	0.15%
7	Bicyclo[3.3.1]non-2-en-9-ol, syn-	C <sub>9</sub> H <sub>14</sub> O	626	19877-78-2	1.17%
8	Cyclohexene, 1-(1-propynyl)-	C <sub>9</sub> H <sub>12</sub>	624	1655-05-6	0.11%
9	p-Toluidine, N-methyl-N-nitroso-	C <sub>8</sub> H <sub>10</sub> N <sub>2</sub> O	616	937-24-6	0.08%
10	(7R)-cis-Bicyclo[4.3.0]-3-nonen-7-ol	C <sub>9</sub> H <sub>14</sub> O	609	82934-92-7	0.06%

Table 6: GC-MS of Nalparadi Taila at RT- 15.9

Peak Number	Name of the component	Formula	Match factor	CAS#	Probable %
1	6H-Indolo[3,2,1-de][1,5]naphthyridin-6-one, 1,2,3,3a,4,5-hexahydro-8-hydroxy-3-methyl-	C <sub>15</sub> H <sub>16</sub> N <sub>2</sub> O <sub>2</sub>	566	50630-67-6	31.5%
2	n-Hexadecanoic acid	C <sub>16</sub> H <sub>32</sub> O <sub>2</sub>	563	57-10-3	27.8%
3	n-Hexadecanoic acid	C <sub>16</sub> H <sub>32</sub> O <sub>2</sub>	524	57-10-3	27.8%
4	n-Hexadecanoic acid	C <sub>16</sub> H <sub>32</sub> O <sub>2</sub>	500	57-10-3	27.8%
5	1H-Indene, 2-butyl-3-hexyl-	C <sub>19</sub> H <sub>28</sub>	498	54986-54-8	4.47%
6	n-Hexadecanoic acid	C <sub>16</sub> H <sub>32</sub> O <sub>2</sub>	48	57-10-3	27.8%
7	2-Oxabicyclo[4.2.0]oct-4-en-3-one, rel-(1R,6S,7S,8S)-5-methoxy-8-(4-methoxy-2-oxo-2H-pyran-6-yl)-7-(4-ethylphenyl)-1-[(E)-2-(4-ethylphenyl)ethenyl]-	C <sub>32</sub> H <sub>32</sub> O <sub>6</sub>	487	-	3.07%
8	Nonanedioic acid, bis(2-methylpropyl) ester	C <sub>17</sub> H <sub>32</sub> O <sub>4</sub>	486	105-80-6	2.95%
9	Palmitic anhydride	C <sub>32</sub> H <sub>62</sub> O <sub>3</sub>	485	623-65-4	2.83%
10	2,2-Dimethyl-1-oxa-2-silacyclotridecanone-13	C <sub>13</sub> H <sub>26</sub> O <sub>2</sub> Si	482	20470-88-6	2.50%

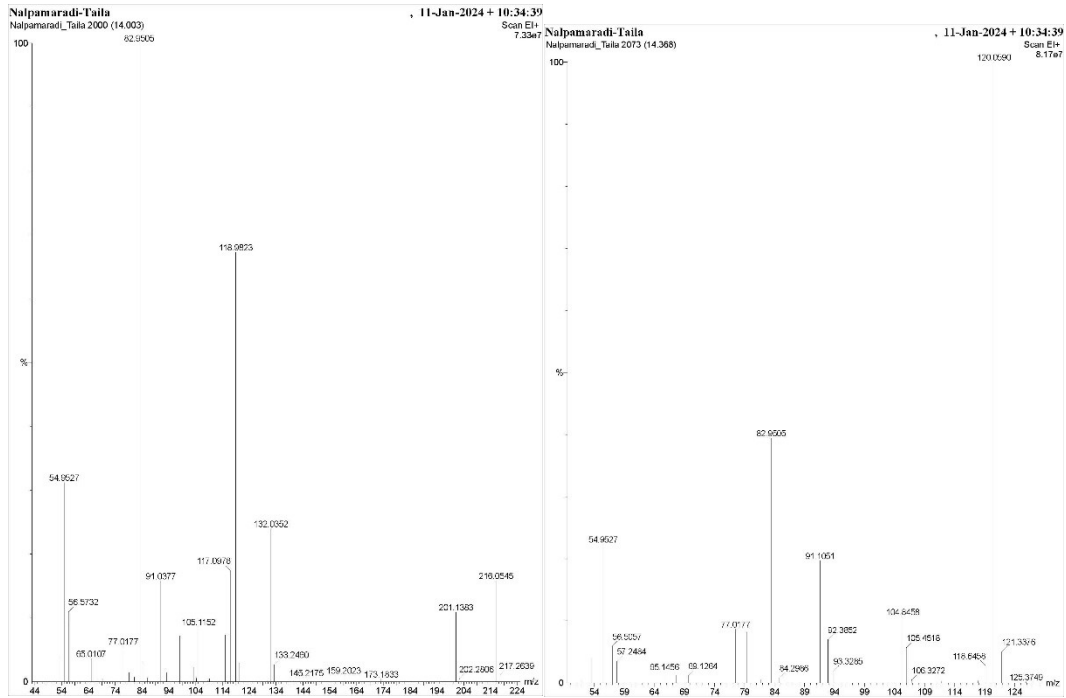
Table 7: GC-MS of Nalparadi Taila at RT- 16.8

Peak Number	Name of the component	Formula	Match factor	CAS#	Probable %
1	4-Chloro-3-{3-cyclobutyl-[1,2,4]triazolo[3,4-b][1,3,4]thiadiazol-6-yl}-1H-pyrazole	C <sub>10</sub> H <sub>9</sub> ClN <sub>6</sub> S	925	-	9.90%
2	1,2-Dibromo-4,5-methylenedioxybenzene	C <sub>7</sub> H <sub>4</sub> Br <sub>2</sub> O <sub>2</sub>	924	5279-32-3	9.51%
3	7-Chloro-3-(phenylamino)quinoxaline-2-carbonitrile	C <sub>15</sub> H <sub>9</sub> ClN <sub>4</sub>	923		9.14%
4	2-Thienyl-diphenylmethylsilane	C <sub>17</sub> H <sub>16</sub> SSi	911	22409-06-9	6.09%
5	Tris(2-thienyl)phosphine	C <sub>12</sub> H <sub>9</sub> PS <sub>3</sub>	908	24171-89-9	5.38%
6	Cyclopent-2-enone, 5-benzylideno-3-(4-chlorophenyl)-	C <sub>18</sub> H <sub>13</sub> ClO	907	-	5.17%
7	1-Chloromethyl-1-(3-phenylprop-2-enyloxy)-1-silacyclohexane	C <sub>15</sub> H <sub>21</sub> ClOSi	906	-	4.97%
8	3,5-Dibromo-4-hydroxybenzaldehyde	C <sub>7</sub> H <sub>4</sub> Br <sub>2</sub> O <sub>2</sub>	906	2973-77-5	4.97%
9	3,5-Dibromo-4-hydroxybenzaldehyde	C <sub>7</sub> H <sub>4</sub> Br <sub>2</sub> O <sub>2</sub>	905	2973-77-5	4.97%
10	3,5-Dibromosalicylaldehyde	C <sub>7</sub> H <sub>4</sub> Br <sub>2</sub> O <sub>2</sub>	904	90-59-5	4.58%

Table 8: GC-MS of Nalparadi Taila at RT- 18.5

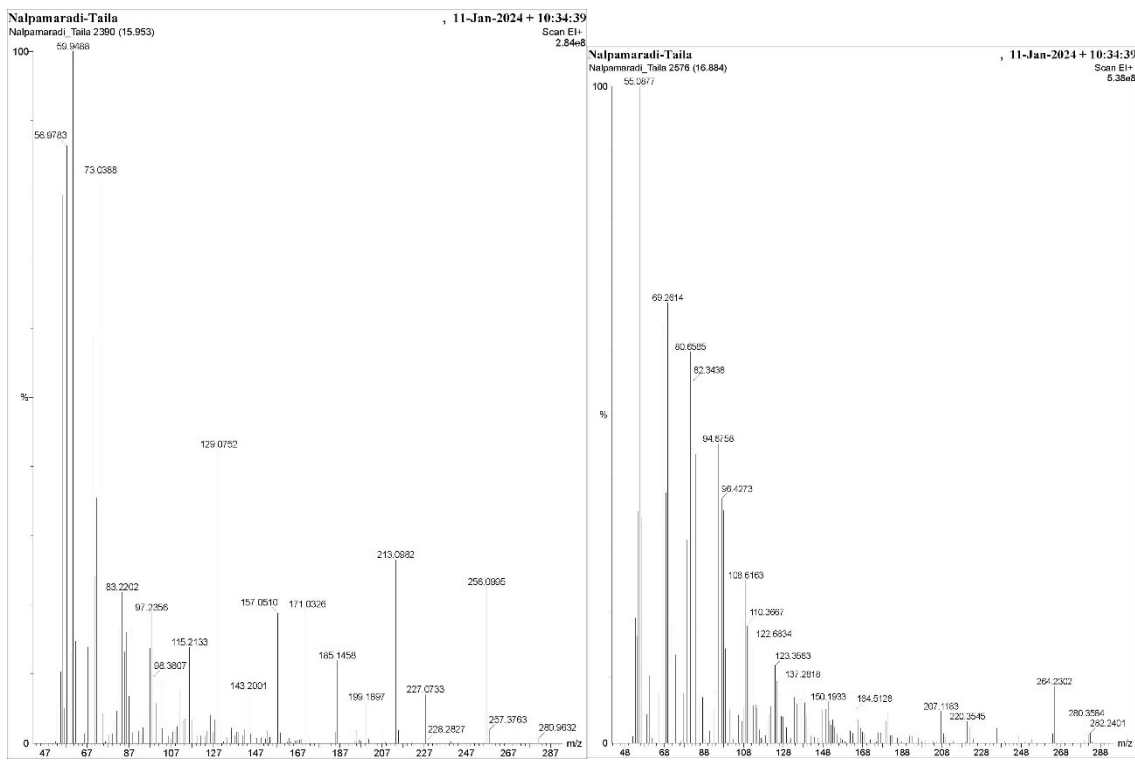
Peak Number	Name of the component	Formula	Match factor	CAS#	Probable %
1	9-Octadecenoic acid (Z)-, oxiranylmethyl ester	C <sub>21</sub> H <sub>38</sub> O <sub>3</sub>	763	5431-33-4	17.5%
2	Glycidyl palmitoleate	C <sub>19</sub> H <sub>34</sub> O <sub>3</sub>	760	213738-77-3	15.4%
3	9-Octadecenoic acid (Z)-, oxiranylmethyl ester	C <sub>21</sub> H <sub>38</sub> O <sub>3</sub>	758	5431-33-4	17.5%
4	9,12-Octadecadienyl chloride, (Z,Z)-	C <sub>18</sub> H <sub>31</sub> ClO	749	7459-33-8	10.6%
5	Glycidyl (Z)-9-Heptadecenoate	C <sub>20</sub> H <sub>36</sub> O <sub>3</sub>	749	-	10.6%
6	9,12-Octadecadienoic acid (Z,Z)-, 2-hydroxy-1-(hydroxymethyl)ethyl ester	C <sub>21</sub> H <sub>38</sub> O <sub>4</sub>	740	3443-82-1	7.69%
7	Cyclopropanoic acid, 2-[[2-(2-ethylcyclopropyl)methyl]cyclopropyl]methyl-, methyl ester	C <sub>22</sub> H <sub>38</sub> O <sub>2</sub>	715	10152-71-3	2.34%
8	9,12,15-Octadecatrienoic acid, 2-(acetyloxy)-1-(acetyloxy)methyl]ethyl ester, (Z,Z,Z)-	C <sub>25</sub> H <sub>40</sub> O <sub>6</sub>	709	55320-01-9	1.84%
9	Linoleic acid ethyl ester	C <sub>20</sub> H <sub>36</sub> O <sub>2</sub>	707	544-35-4	1.70%
10	9,12,15-Octadecatrienoic acid, 2,3-dihydroxypropyl ester, (Z,Z,Z)-	C <sub>21</sub> H <sub>36</sub> O <sub>4</sub>	705	18465-99-1	1.56%

### Images of Mass Spectroscopy of Nalpamaradi Taila at different RT



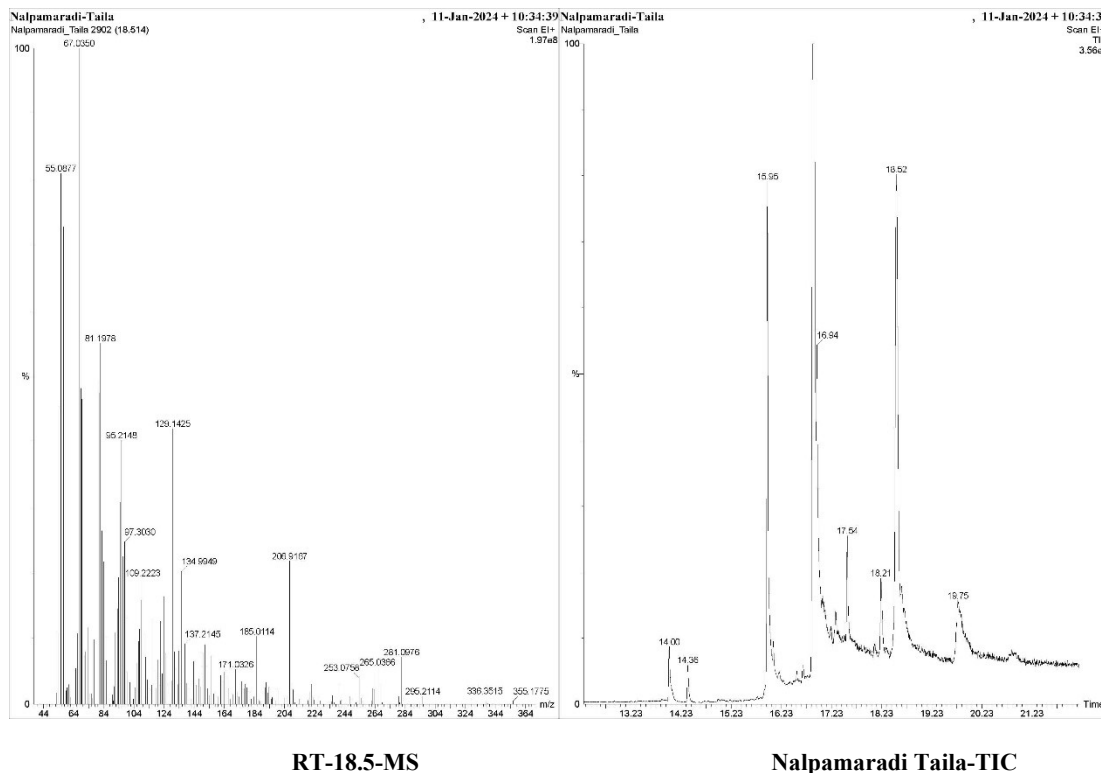
RT-14.0-MS

RT-14.3-MS



RT-15.9-MS

RT-16.8-MS



RT-18.5-MS

Nalparadi Taila-TIC

## DISCUSSION

The Nalparadi oil has characteristic odour of the ingredients, it has yellow colour owing to the colour of gingelly/ sesame oil and turmeric juice used for the preparation. Appearance of froth during oil preparation, the formation of a wick with the paste, cessation of crackling sound when the paste was put on fire indicates the loss of moisture content which is a test of perfectness of oil. The oil was heated on medium flame for the active principles to get dissociated in the media and it also helps to attain correct paka lakshana without any charring.

Refractive Index of a substance is defined as the ratio of the velocity of light in

vacuum or air, compared to that in the substance. It indicates density of sample compared to air and liquid media. The refractive index of Nalparadi taila is 1.478. Specific gravity is 0.92 indicating the presence of solute content in the oil medium. Viscosity it is the flow property of a substance, which is closely related to the resistance to flow. The observed value was 0.565 as the viscosity of oil is higher.

Ten peaks each at RT 14.0, 14.3, 15.9, 16.8 and 18.5 are showcased by GC-MS of Nalparadi Taila. At RT- 14.0 AR-Turmerone was high with 97.2%, 2-Methyl-6-(4-methylenecyclohex-2-en-1-yl)hept-2-en-4-one was 56.1% at RT 14.3, 6H-

Indolo[3,2,1-de][1,5]naphthyridin-6-one, 1,2,3,3a,4,5-hexahydro-8-hydroxy-3-methyl- was 31.5% at RT- 15.9, 4-Chloro-3-{3-cyclobutyl-[1,2,4]triazolo[3,4- was 9.90% at RT- 16.8 and 9-Octadecenoic acid (Z)-, oxiranylmethyl ester was 17.5% at RT- 18.5.

## CONCLUSION

Nalpamaradi Taila is a simple formulation, is economic by virtue of easily available ingredients and a time-tested classical formulation indicated in skin ailments for external application. The physico chemical and GCMS analysis have set preliminary standards for the formulation. Further research works on various skin diseases will provide evidence for the applicability of the formulation.

## SOURCE OF SUPPORT AND ACKNOWLEDGEMENT

The authors are thankful to Rajiv Gandhi University of Health Sciences, Karnataka, Bengaluru for funding the UG Research Project. A note of gratitude to SDM Educational Society, Ujire, Dr. Prasanna Narasimha Rao, Director, SDM Institutes of Ayurveda, Dr. Shailaja U, Principal, SDMCAH, Hassan, Faculty of Dept. of Rasashastra & Bhaishajya Kalpana and

Department of Research & Development, SDMCAH, Hassan for their support and guidance.

## REFERENCES

- [1] Anonymous, Sahasrayoga. Bhasma Ksharadi Yoga, 3rd Edition, Delhi: Chaukhamba Sanskrit Pratishtan; 2002. Pg.296.
- [2] [https://www.researchgate.net/publication/341292104\\_Clinical\\_Evaluation\\_of\\_Efficacy\\_and\\_Safety\\_of\\_Classical\\_Ayurveda\\_Formulations\\_Panchatikta\\_a\\_Ghrita\\_and\\_Nalpamaradi\\_Taila\\_in\\_the\\_Management\\_of\\_Psoriasis\\_A\\_Study\\_Protocol](https://www.researchgate.net/publication/341292104_Clinical_Evaluation_of_Efficacy_and_Safety_of_Classical_Ayurveda_Formulations_Panchatikta_a_Ghrita_and_Nalpamaradi_Taila_in_the_Management_of_Psoriasis_A_Study_Protocol)
- [3] Anonymous, Ayurveda Formulary of India. Part 1, Second Edition, 2003, Ministry of Health & Family Welfare, Govt. of India, The Controller of Publications, New Delhi. P. 400.
- [4] Lavekar G S, Padhi M M, Pant P, editors. Laboratory guide for the analysis of Ayurveda and siddha formulations. 1<sup>st</sup> ed. New Delhi: Central Council for Research in Ayurveda and Siddha, Dept. of AYUSH, Ministry of Health and Family welfare, GoI; 2010: p. 42.