Antifungal activity of Cymbopogon citratus, Cymbopogon Nardus, Ocimum basilicum oils, and Ketoconazole against trichophyton tonsurans

Gitanjali Chandrakantrao Chavan[1], Dr.Mrunal Krishnarao Shirsat[2], Dr.Manoj P Shirbhate[3], Dr. Santosh R. Tarke[4]

[1] Research Scholar, Sunrise University, Alwar, Rajasthan.

[2] Principal SBSPM's B.Pharmacy College, Ambajogai, Maharashta.

[3] Principal Amrutvahini Institute of Pharmacy, Sangamner ,Maharashtra.

[4] Professor SBSPM's B.Pharmacy College, Ambajogai, Maharashtra.

Abstract

To develop the best anti-inflammatory effect of a combination of different essential herbs, we first compared the anti-inflammatory properties of our essential oils with Kill synthetic bacteria against two species such as Trichophyton, which often causes rincitratesilamentous fungi act as dermatophytes in humans and cattle. Cymbopogon citratus (common name: Lemongrass), Cymbopogon nardus (common name:Citronella) and Ocimum basilicum (common name:Basil) oil are used.

Ringworm is usually treated with intermittent or systemic administration of polyene or azole antibiotics, including ketoconazole, which is effective but problematic. However, the efficacy of essential oils and their main products against the broad spectrum of trichophyton, especially compared to ketoconazole, and the efficacy of essential oils selected from among different sizes and formulations have not been evaluated before. We did not compare our Minimum Inhibitory Concentration (MIC) and Zone of Inhibition test data with data reported in previous studies because essential aspects of the oil of aromatic plants differ and depend on the phytochemical species, cultivation methods and cultivation, collection, etc. Factors and Storage Conditions.

Keywords

Essential oils, antifungal effect, *Tinea corporis, Tinea capitis*.

Introduction:

Since ancient times, folk medicine has used natural products and herbal products such as essential oils to treat many ailments. The combination of different essential oils is often a therapeutic approach in human health. Many scientists have studied exactly how essential oils work and their many properties and combinations.

This study investigated the antibacterial activity of essential oils (eg, lemon, Cymbopogon citratus, and Ocimum basilicum oils) as natural treatments for bacteria that cause skin infections.

The aim of this study is to define the properties of many anti-inflammatory essential oils and their role in essential oils or formulations. Resistance

Antibiotic-resistant microorganisms also play an important role in disease prevention. These antibodies also act on targets that can cause damage to milk cells or cause adverse drug reactions. Therefore, the discovery of new antibodies is a historical process. Phytochemicals can be more effective than the smartest phytochemicals and synthetic drugs.

The use of plant extracts as medicine began in early human civilization. Traditional medicine based on these plants has been used for many years. Many of such of plant extracts are defined in Ayurveda.

Experimental

Assessment of biologically active chemicals in the essential oils

The antibacterial movement of Cymbopogon citratus, Cymbopogon citratus oil, Ocimum basilicum oil, and the ketoconazole sedate against Trichophytontrichophytonn was found within the locale of hindrance between 0.93 mm and 7.63 mm in breadth. The centrality of confinement destinations is appeared in Table 1 and is compared in Figure 1 (Figure 1).

Sr. No.	Antifungal agents	Inhibition Zone(in mm) ±SD

1	Lemon grass	7.79 ± 0.64
2	Cymbopogon nardus	0.95 ± 0.14
3	Ocimum basilicum	2.65 ± 0.21
4	Ketoconazole	7.64 ± 0.16

Table 1. Antifungal activity of various essential oils and antifungal drugs against the microorganism; *Trichophyton tonsurans* 8475

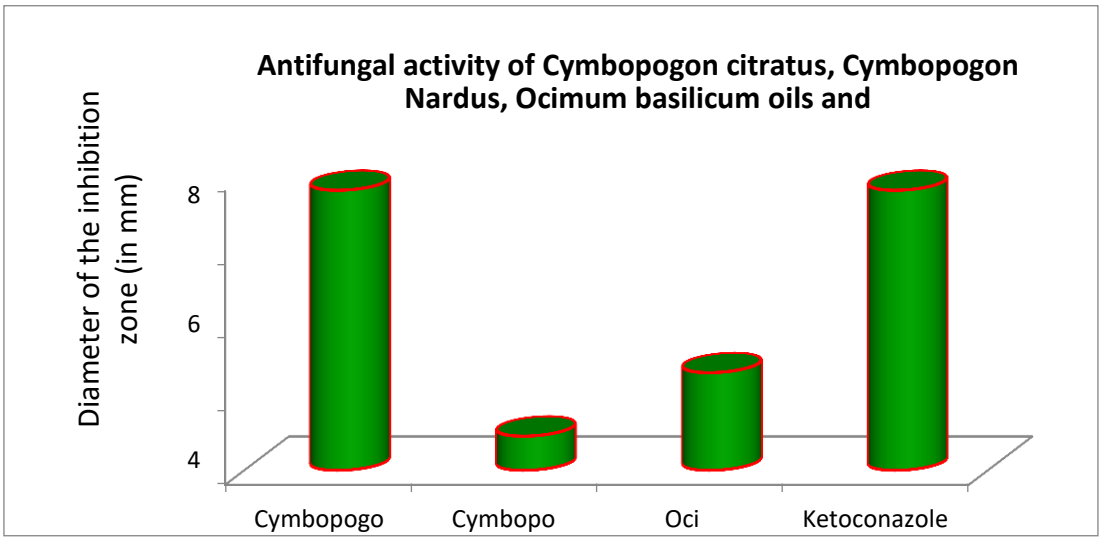

Figure 1. Antifungal activity of the various essential oils and antifungal drug against microorganisms; *Trichophyton tonsurans* 8475

AntifungalactivityforCymbopogon citratusandCymbopogon Nardus(LC)*Trichophyton tonsurans* 8475

Evaluation of bioactive compounds in essential oils by GC-MS method.

The antibacterial movement of lemon, Cymbopogon citratus oil, Ocimum basilicum oil, and sedate ketoconazole against Trichophyton Trichophyton was found within the zone of hindrance between 0.93 mm and 7.63 mm in distance across. The noteworthiness of the confinement location is appeared in Table 1 and is compared in Figure (Figure 1).

Sr. No.	Name of Formulation	Zone of inhibition (in mm) ±SD
1	LC1	6.73 ± .24
2	LC2	6.86 ± .16
3	LC3	6.63 ± .04
4	LC4	6.10 ± .16
5	LC5	5.66 ± .04

Table 2. Antifungal activity for the Cymbopogon citratus and Cymbopogon nardus (LC) formulations againstmicroorganism;*Trichophyton tonsurans* 8475

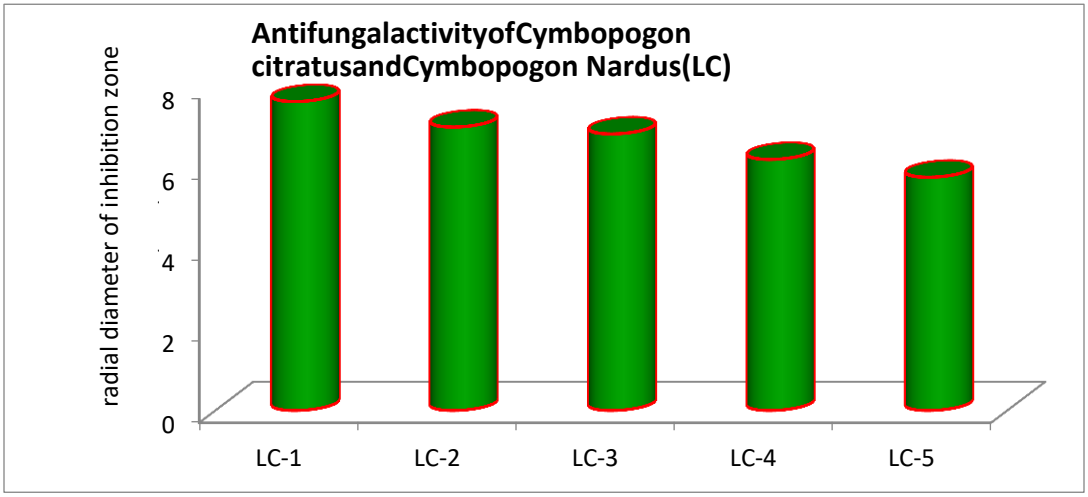

Figure 2. Antifungal activity forCymbopogon citratus and Cymbopogon Nardus formulations against microorganism; *Trichophyton tonsurans* 8475

AntifungalactivityforCymbopogon nardusandCymbopogon citratus(CL)againstmicroorganism; *Trichophyton tonsurans* 8475

The antifungal action of Cymbopogon citratus and Cymbopogon citratus extricates against Trichophyton tonsurans 8475 varied between 2.83 mm and 3.66 mm within the confinement zone. The resilience band values are appeared in Table 3 and graphically in Figure 3.

Sr. No.	Name of Formulation	Zone of inhibition (in mm) ±SD
1	**CL1**	**2.94 ± 0.14**
2	**CL2**	**2.83 ± 0.26**
3	**CL3**	**2.89 ± 0.13**
4	**CL4**	**3.66 ± 0.06**

Table 3. Antifungal activity forCymbopogon nardus and Cymbopogon citratus (LC)

AntifungalactivityforCymbopogon nardusandCymbopogon citratus(CL)againstmicroorganism; *Trichophyton tonsurans* 8475

againstmicroorganism;*Trichophyton tonsurans* 8475

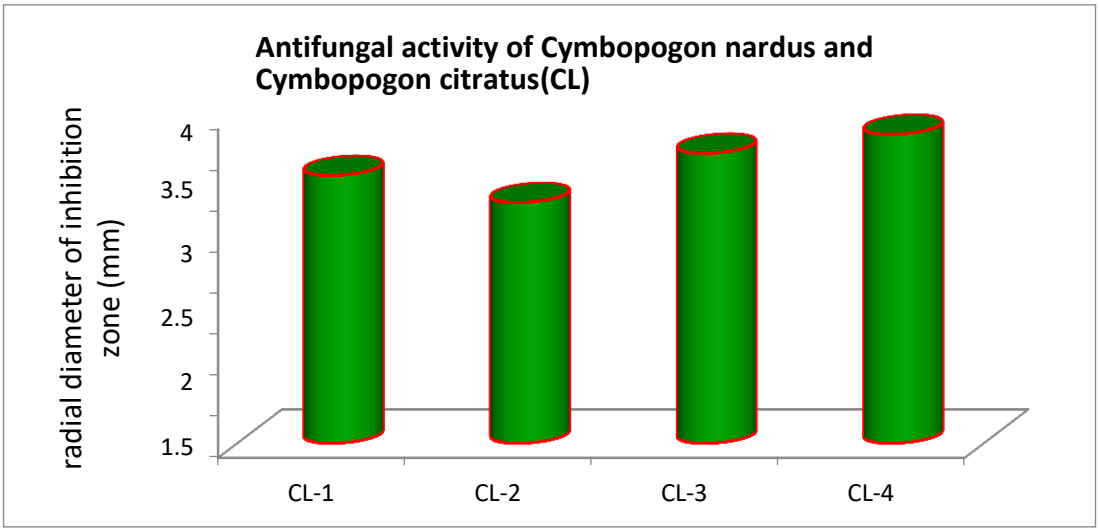

Figure 3. Antifungal activity forCymbopogon nardus and Cymbopogon citratus formulations againstmicroorganism; *Trichophyton tonsurans* 8475

AntifungalactivityforOcimum basilicumandCymbopogon citratus(BL)againstmicroorganism; *Trichophyton tonsurans* 8475

The antibacterial action of Ocimum basilicum and Cymbopogon citratus arranged against Trichophyton tonsurans 8475 was included within the hindrance zone from 2.76 mm to 6.26 mm in spiral breadth. See Table 4 and the chart of Figure 4 for the values of the hindrance zone.

Antifungal activity of Cymbopogon citratus, Cymbopogon Nardus, Ocimum basilicum oils, and Ketoconazole against trichophyton tonsurans

AntifungalactivityforOcimum basilicumandCymbopogon citratus(BL)againstmicroorganism; *Trichophyton tonsurans* 8475

The antibacterial action of Ocimum basilicum and Cymbopogon citratus arranged against Trichophyton tonsurans 8475 was included within the hindrance zone from 2.76 mm to 6.26 mm in spiral breadth. See Table 4 and the chart of Figure 4 for the values of the hindrance zone.

Sr. No.	Formulation	Zone of inhibition (in mm) ±SD
1	BL1	2.76 ± 0.14
2	BL2	3.26 ± 0.08
3	BL3	3.73 ± 0.11
4	BL4	3.73 ± 0.06
5	BL5	6.26 ± 0.04

Table 4. Antifungal activity forOcimum basilicum and Cymbopogon citratus (BL) againstmicroorganism;*Trichophyton tonsurans* 8475

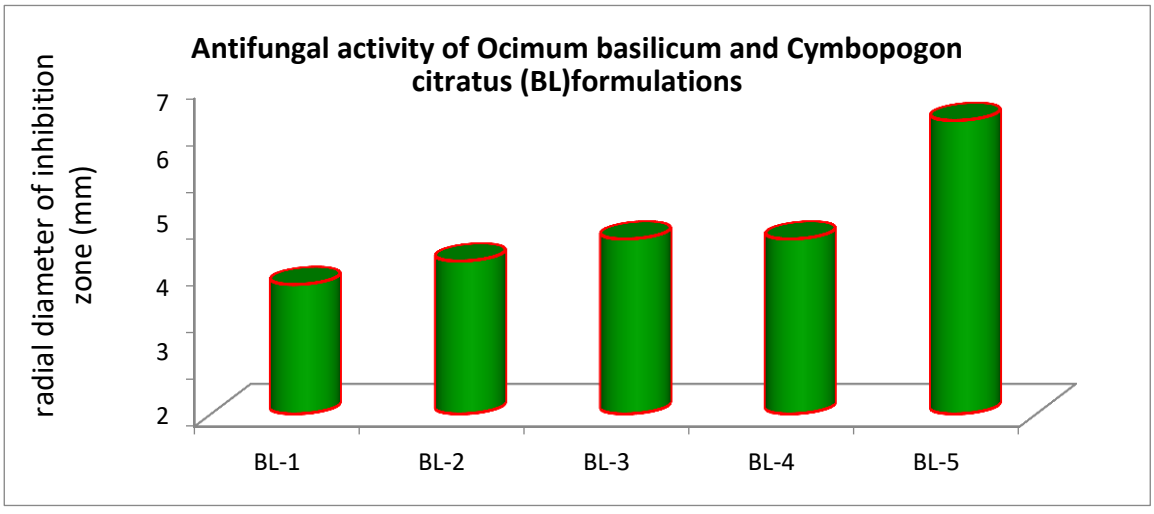

Figure 4. Antifungal activity of theOcimum basilicum and Cymbopogon citratus against microorganism; *Trichophyton tonsurans* 8475

Antifungal activity of Cymbopogon citratus, Cymbopogon Nardus, Ocimum basilicum oils, and Ketoconazole against trichophyton tonsurans

Antifungalactivityfor theCymbopogon citratusandOcimum basilicum(LB)againstmicroorganism; *Trichophyton tonsurans* 8475

The antifungal action of lemon and Ocimum basilicum arrangements against Trichophyton tonsurans 8475 was identified with an hindrance zone from 6.26 mm to 7.46 mm spiral breadth. The noteworthiness of the zone of restraint is appeared in Table 5 and graphically appeared in Figure 5.

Sr. No.	Formulation	Zone of inhibition (in mm) ±SD
1	LB1	7.46 ± 0.21
2	LB2	7.43 ± 0.35
3	LB3	7.13 ± 0.06
4	LB4	6.46 ± 0.14
5	LB5	6.16 ± 0.06

Table 5. Antifungal activity for Cymbopogon citratus and Ocimum basilicum (LB)againstmicroorganism;*Trichophyton tonsurans.*

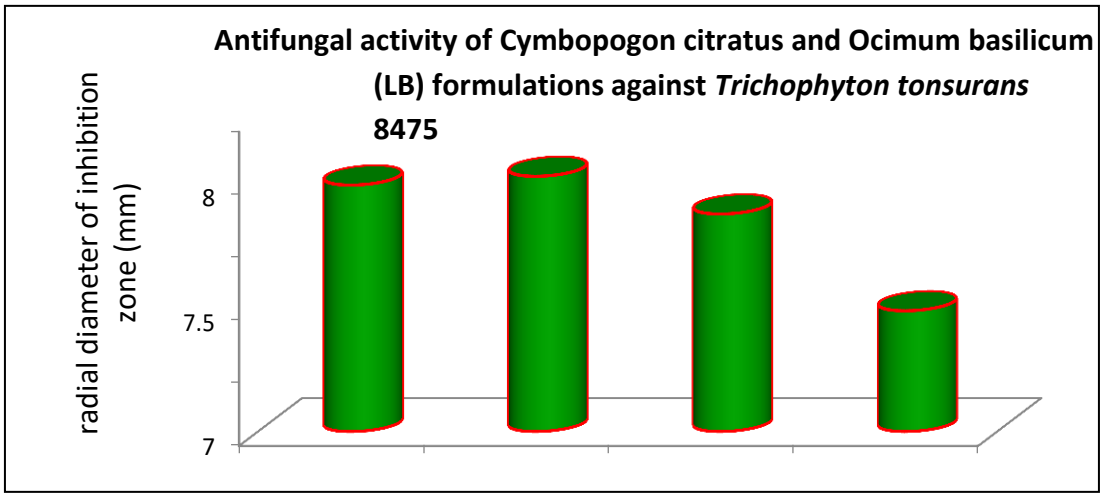

Figure 5. Antifungal activity forCymbopogon citratus and Ocimum basilicum against

microorganism; *Trichophyton tonsurans*Antifungal activity forOcimum basilicum and Cymbopogon nardus (BC) againstmicroorganism; *Trichophyton tonsurans*

Anti-microbials of details against Trichophyton tonsurans 8475 were found in zones of restraint such as outspread distance across from 1.40 mm to 2.53 mm. The esteem of the hindrance zone appears in Table 6 and the chart has appeared in Figure 6.

Sr. No.	Formulation	Zone of inhibition (in mm) ±SD
1	BC1	2.40 ± 0.10
2	BC2	2.53 ± 0.05
3	BC3	2.43 ± 0.10
4	BC4	2.12 ± 0.15
5	BC5	1.40 ± 0.10

Table 6. Antifungal activity of Ocimum basilicum and Cymbopogon nardus (BC) formulations against *Trichophyton tonsurans*

radial diameter of inhibition

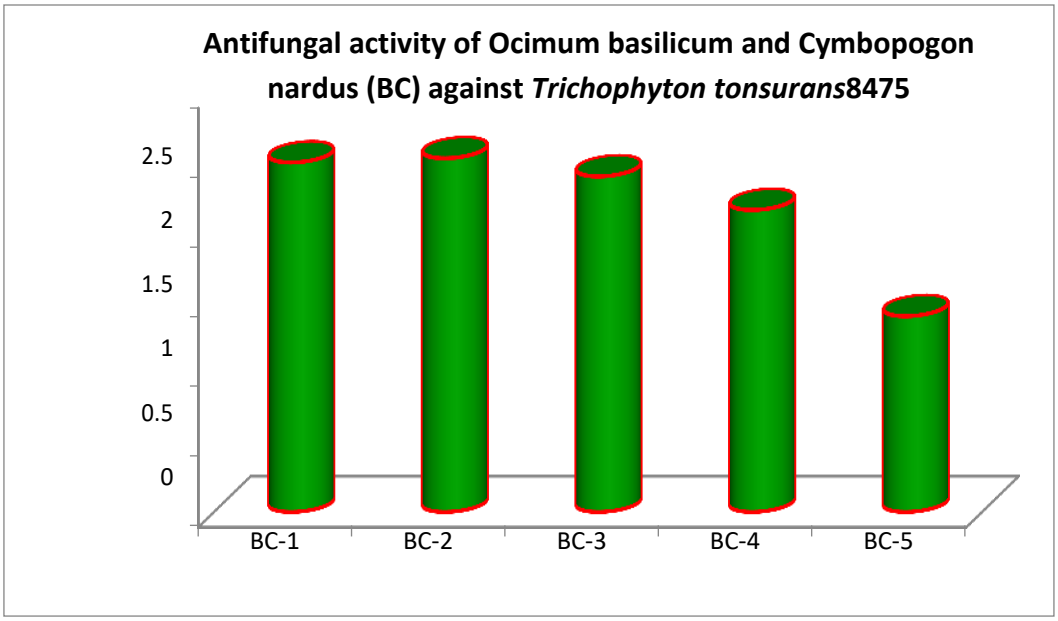

Figure 6. Antifungal activity forOcimum basilicum and Cymbopogon nardus formulations againstmicroorganism; Trichophyton *tonsurans*

Antifungal activity forCymbopogon nardus and Ocimum basilicum (CB) microorganism; against*Trichophyton tonsurans* 8475

The antibacterial movement of the definition against Trichophyton tonsurans 8475 was found within the zone of restraint between 1.07 mm and 1.25 mm spiral breadth. The values of the blocking zone appear in Table 7 underneath, and the chart has appeared in Figure 7.

Sr. No.	Formulation	Zone of inhibition (in mm) ±SD
1	CB1	1.25 ± 0.06
2	CB2	1.25 ± 0.21
3	CB3	1.07 ± 0.06
4	CB4	1.07 ± 0.19

Table 7. Antifungal activity forCymbopogon nardus and Ocimum basilicum (CB) formulations against *microorganism;Trichophyton tonsurans* 8475

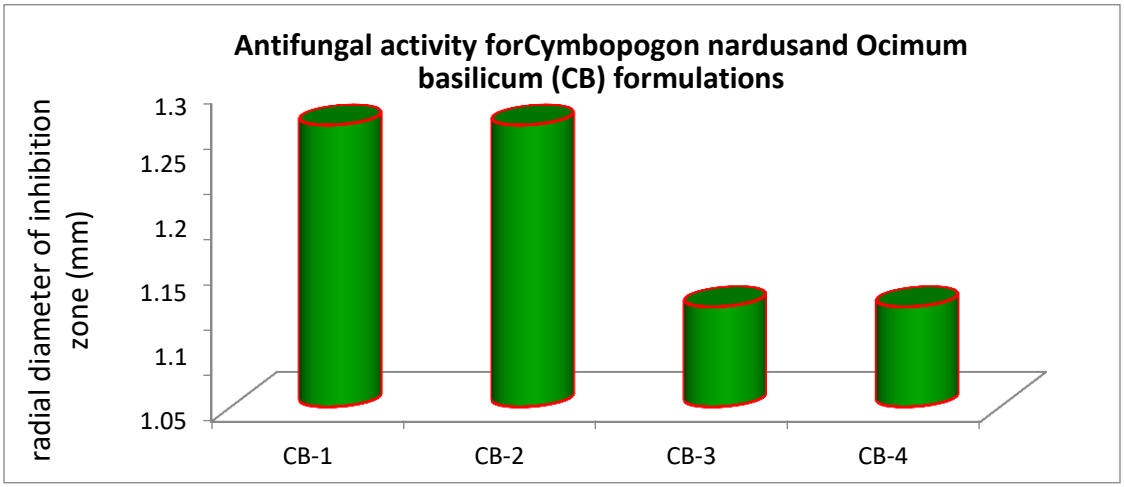

Figure 7. Antifungal activity forCymbopogon nardus and Ocimum basilicum againstmicroorganism; *Trichophyton tonsurans*

Antifungal activity of Cymbopogon citratus, Cymbopogon Nardus, Ocimum basilicum oils, and Ketoconazole against trichophyton tonsurans

Antifungal activity forCymbopogon citratus, Ocimum basilicum and Cymbopogon nardus (LBC) againstmicroorganism; Trichophyton *tonsurans*.

The antifungal action of lemon, Ocimum basilicum and Cymbopogon nardus against Trihophyton tonsurans 8475 was affirmed by the zone of restraint from 7.56 mm to 7.67 mm spiral breadth. Prohibition zone values are appeared in Table 8 underneath and the outline in Figure 8.

Sr. No.	Formulation	Zone of inhibition (in mm) ±SD
1	LBC1	7.67± 0.06
2	LBC2	7.61 ± 0.22
3	LBC3	7.56 ± 0.17
4	LBC4	7.64 ± 0.20

Table 8. Antifungal activity forCymbopogon citratus, Ocimum basilicum and Cymbopogon nardus (LBC)againstmicroorganism; *Trichophyton tonsurans*

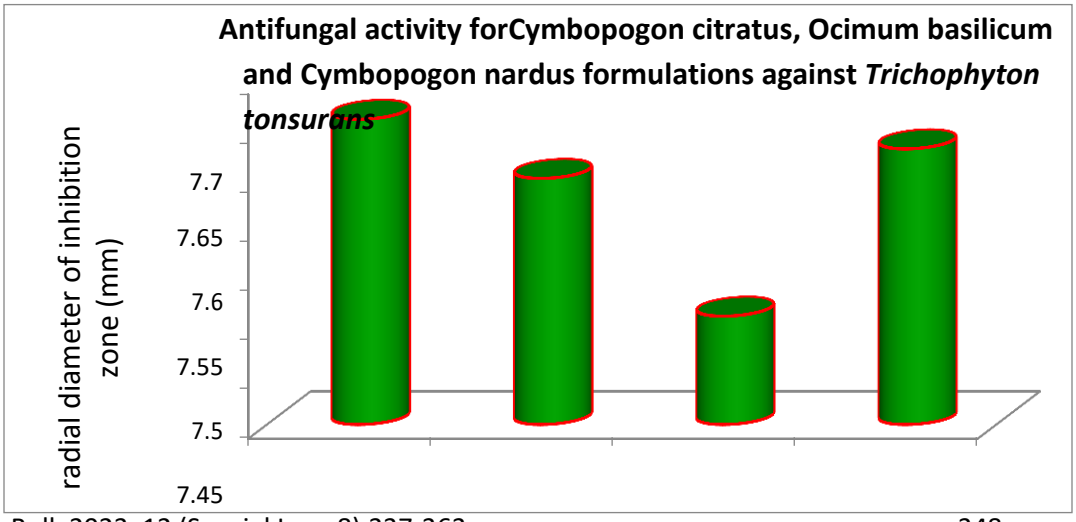

Figure 8. Antifungal activity forCymbopogon citratus, Ocimum basilicum and Cymbopogon nardus against microorganism; *Trichophyton tonsurans*

Minimum inhibitory concentration (MIC) of Cymbopogon citratus, Cymbopogon nardus, Ocimum basilicum oils and ketoconazole against *Trichophyton tonsurans*

MIC of Cymbopogon citratus, Cymbopogon nardus oil, Ocimum basilicum oil, and ketoconazole against Trichophyton trichophyton 8475 extended from 0.10µl/ml to 500µl/ml. MIC comes about are appeared in Table 9 and displayed in a chart for comparison (Figure 9).

Sr. No.	Agents	MIC (inµl/ml)
1	Cymbopogon citratus	1
2	Cymbopogon nardus	400
3	Ocimum basilicum	500
4	Ketoconazole	0.10

Table 9. MIC forCymbopogon citratus, Cymbopogon nardus, Ocimum basilicum oils, and ketoconazole againstmicroorganism;*Trichophyton tonsurans*.

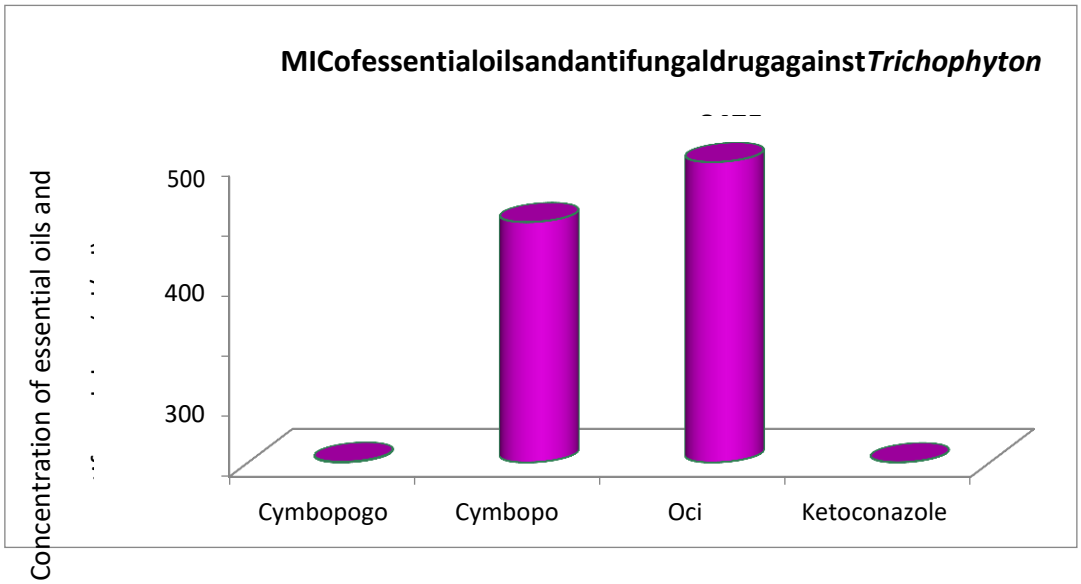

Figure 9. MIC forCymbopogon citratus, Cymbopogon nardus, Ocimum basilicum oils and ketoconazole againstmicroorganism; Trichophyton *tonsurans*

MICforCymbopogon citratus and Cymbopogon nardus (LC) against microorganism; *Trichophyton tonsurans*.

MIC for this medicate against Trihophyton tonsurans is 5 µl/ml to 125 µl/ml. The MIC comes about are appeared in Table 10 and shown graphically (Figure 10).

Sr. No.	Name of Formulation	MIC (in µl/ml)
1	LC1	5
2	LC2	12
3	LC3	27
4	LC4	98
5.	LC5	125

Table 10. MICforCymbopogon citratus and Cymbopogon nardus (LC) microorganism; against *Trichophyton tonsurans* 8475

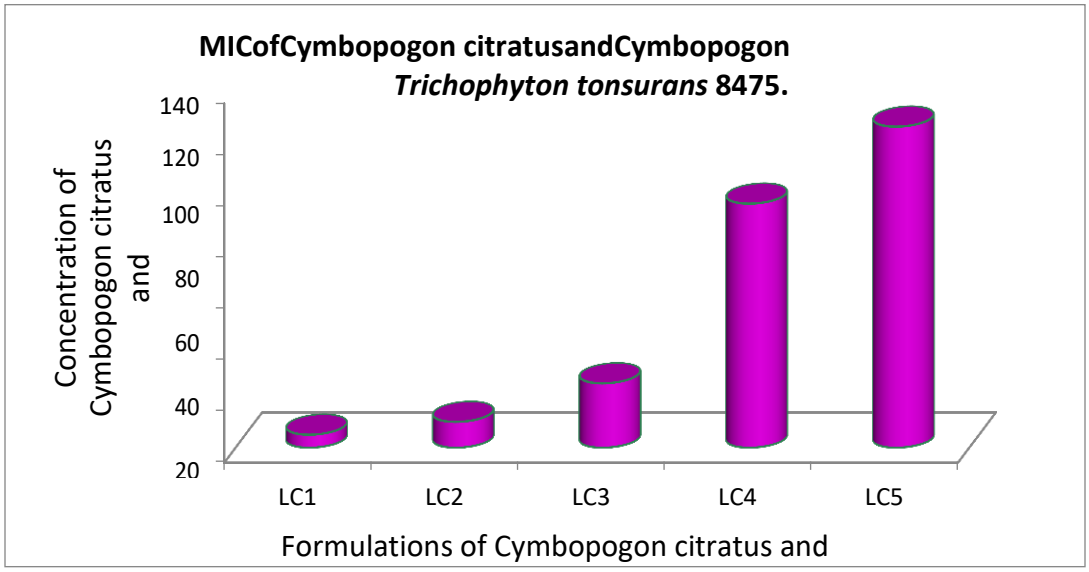

Figure 10. MIC forCymbopogon citratus and Cymbopogon nardus (LC) formulations againstmicroorganism; *Trichophyton tonsurans*

Minimum inhibitory concentration forCymbopogon nardus and Cymbopogon citratus (CL) against microorganism; *Trichophyton tonsurans*

The least inhibitory concentration of CL definition measured against Trihophyton tonsurans extended from 160ul/ml to 385ul/ml. The MIC comes about are appeared graphically in Table 11 and Figure 11.

Sr. No.	Name of Formulation	MIC (in µl/ml)
1	CL1	385
2	CL2	270
3	CL3	275
4	CL4	160

Table 11. The minimum inhibitory concentration of Cymbopogon nardus and Cymbopogon citratus (CL) formulations against *Trichophyton tonsurans*

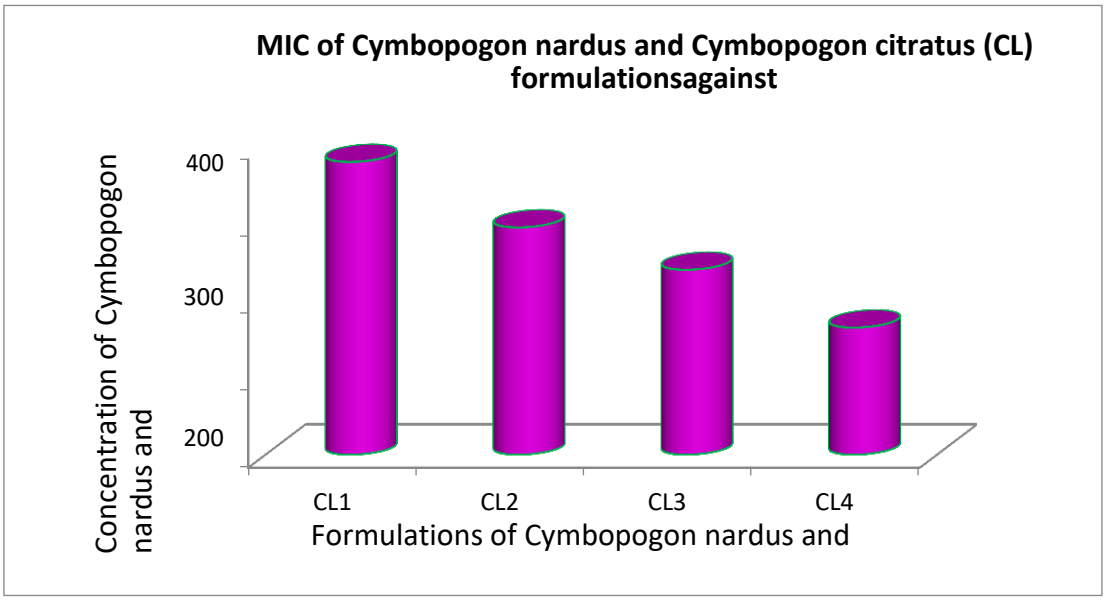

Figure 11. MIC for Cymbopogon nardus and Cymbopogon citratus against *microorganism; Trichophyton tonsurans*

The MICforOcimum basilicum and Cymbopogon citratus (BL) formulations against *Trichophyton tonsurans*

MIC of BL definition against Trichophyton tonsurans extended from 145 µl/ml to 310 µl/ml. The MIC comes about are appeared graphically in Table 12 and Figure 12.

Sr. No.	Name of Formulation	MIC (in µl/ml)
1	BL1	310
2	BL2	270
3	BL3	180

4	**BL4**	**145**
5	**BL5**	**230**

Table 12. MICforOcimum basilicum and Cymbopogon citratus (BL) against microorganism; *Trichophyton tonsuran*

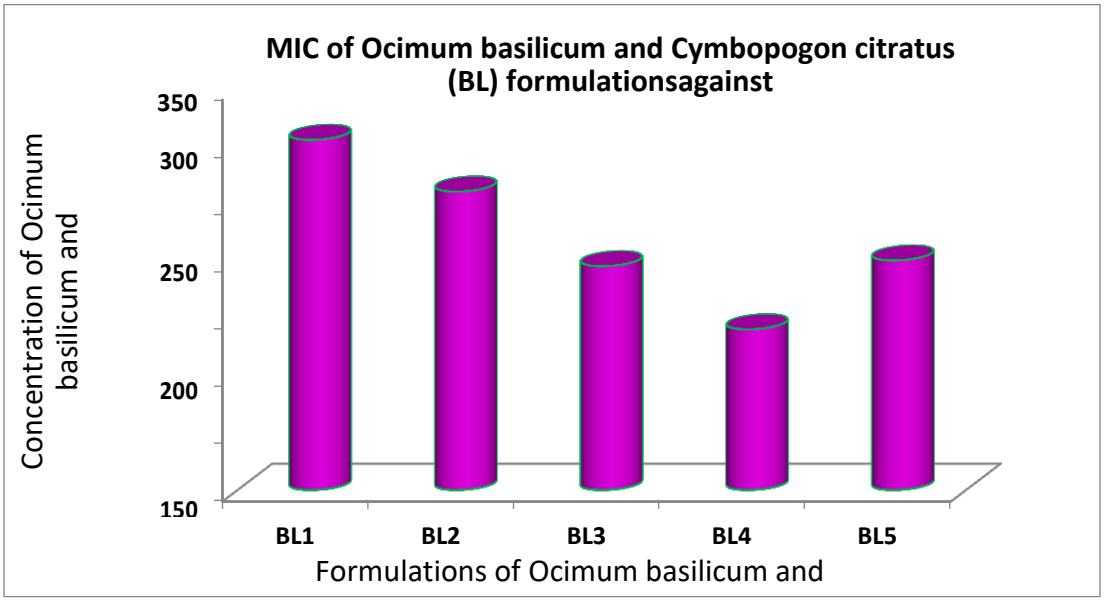

Figure 12. MIC forOcimum basilicum and Cymbopogon citratus against *microorganism; Trichophyton tonsurans*

The MICforCymbopogon citratus and Ocimum basilicum (LB) against microorganism; *Trichophyton tonsurans*

MIC of LB detailing against Trichophyton tonsurans as watched within the run of 5 µl/ml to 65 µl/ml. The MIC comes about are appeared in Table 13 and Figure 13.

Sr. No.	**Formulation**	**MIC (in µl/ml)**

1	**LB1**	**5**
2	**LB2**	**20**
3	**LB3**	**10**
4	**LB4**	**65**

Table 13. MICforCymbopogon citratus and Ocimum basilicum (LB) against microorganism; *Trichophyton tonsurans*

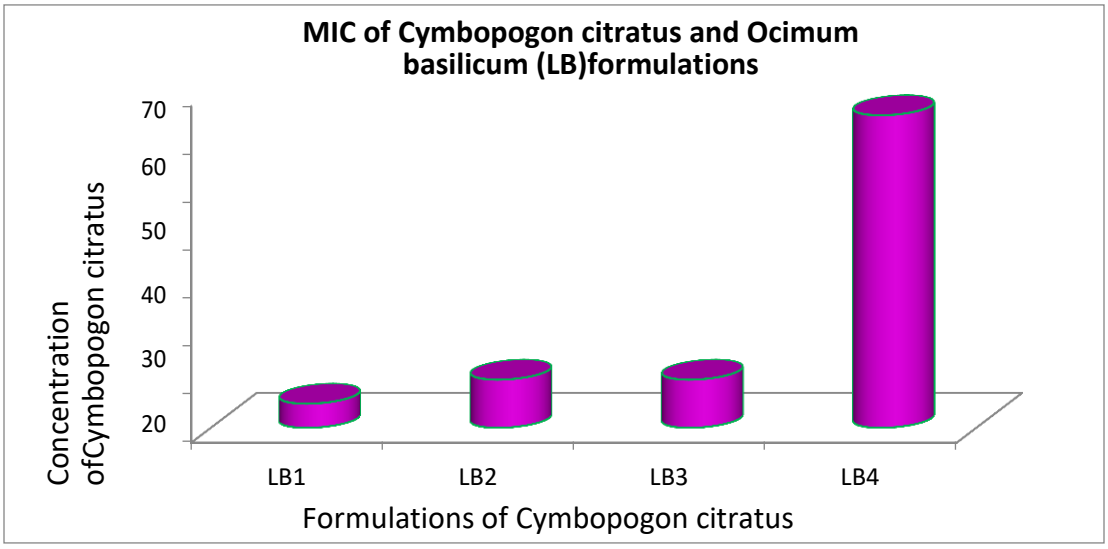

Figure 13. MIC forCymbopogon citratus and Ocimum basilicum against *microorganism; Trichophyton tonsurans*

MICforOcimum basilicum and Cymbopogon nardus (BC) againstmicroorganism; Trichophyton *tonsurans*

MIC against Trichophyton tonsurans extended from 410 µl/ml to 490 µl/ml. The MIC

comes about are appeared graphically in Table 14 and Figure 14.

Sr.No.	Name of Formulation	MIC (µl/ml)
1	BC1	410
2	BC2	420
3	BC3	440
4	BC4	460
5	BC5	490

Table 14. MICforOcimum basilicum and Cymbopogon nardus (BC) against microorganism; *Trichophyton tonsurans*

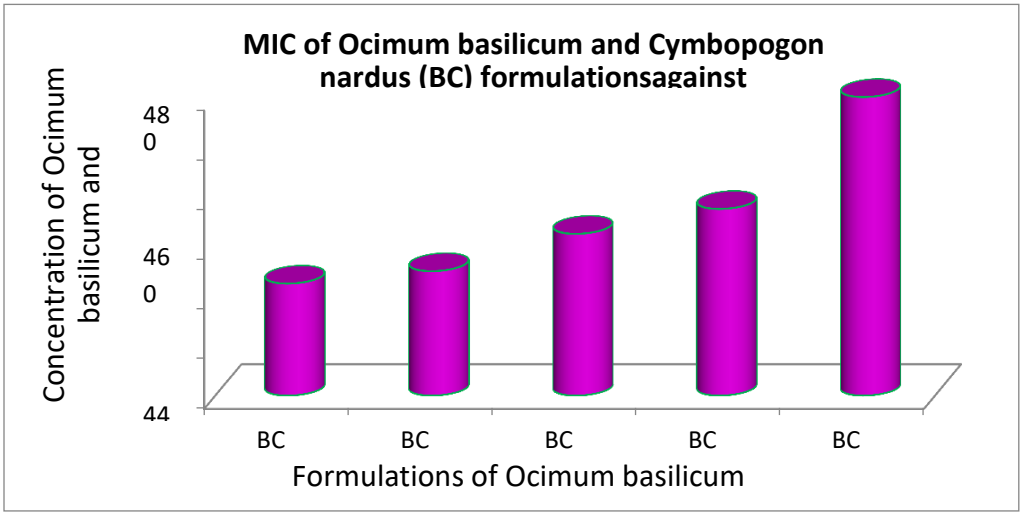

Figure 14. MIC of Ocimum basilicum and Cymbopogon nardus against *microorganism; Trichophyton tonsurans*

MICforCymbopogon nardus and Ocimum basilicum (CB) against microorganism; *Trichophyton tonsurans*

MIC of these details against Trichophyton tonsurans 8475 was recorded from the run of 400 µl/ml to 480 µl/ml. The values of MIC appeared within the taking after table 15 and Figure ical shape appeared in Figure 15.

Sr.No.	Formulation	MIC (in µl/ml)
1	CB1	400
2	CB2	440
3	CB3	460
4	CB4	480

Table 15MIC forCymbopogon nardus and Ocimum basilicum (CB) against microorganism; *Trichophyton tonsurans*

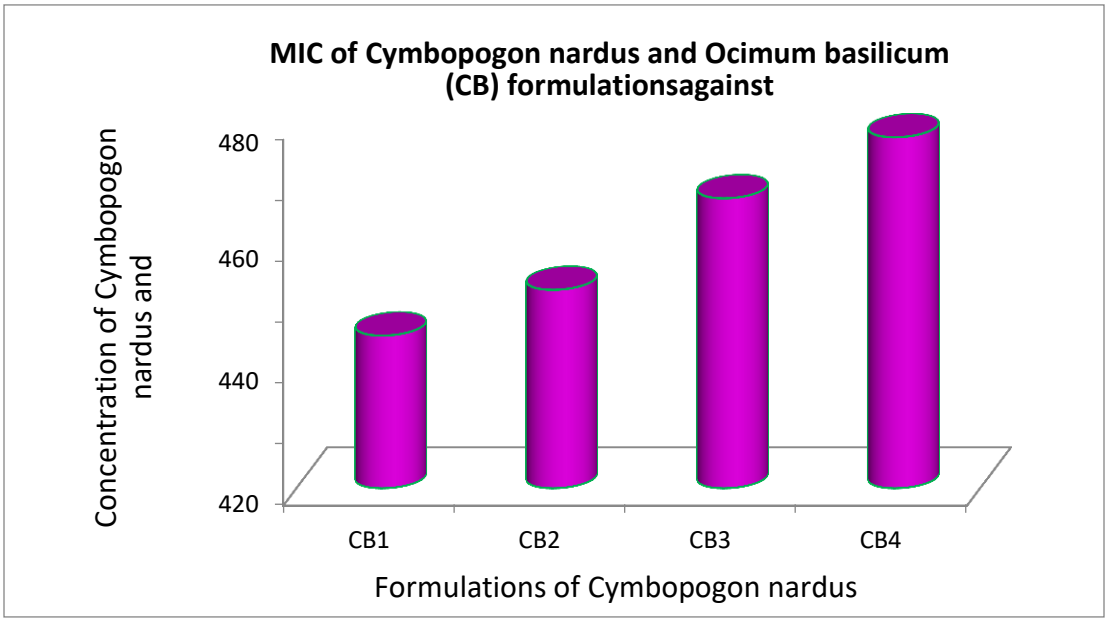

Figure 15. MIC forCymbopogon nardus and Ocimum basilicum against *microorganism; Trichophyton tonsurans*

MIC of Cymbopogon citratus, Ocimum basilicum and Cymbopogon nardus (LBC) againstmicroorganism; *Trichophyton tonsurans*.

MIC of LBC definitions against Trichophyton tonsurans was recognized and the MIC esteem of all these details was break even with which is shown within the taking after Table 16 and Figure shape appeared in Figure16.

Sr. No.	Formulation	MIC (in µl/ml)
1	LBC1	5
2	LBC2	5
3	LBC3	5
4	LBC4	5

Table 16. MICforCymbopogon citratus, Ocimum basilicum and Cymbopogon nardus (LBC) againstmicroorganism; Trichophyton *tonsurans*

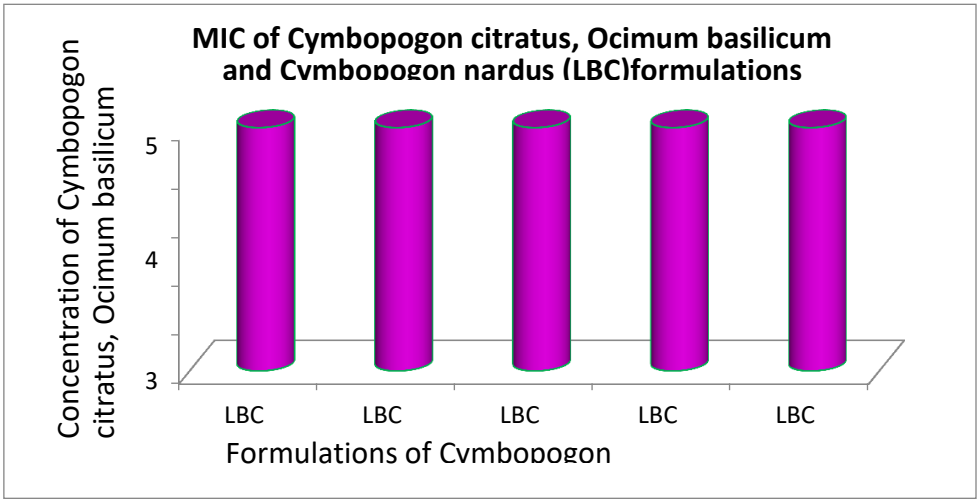

Figure 16. MIC for Cymbopogon citratus, Ocimum basilicum and Cymbopogon nardus against microorganism; *Trichophyton tonsurans*

Summary and Conclusion.

Formulations	**Zone of inhibition in (mm) against *Trichophyton tonsurans* 8475**
Cymbopogon citratus	7.63
Cymbopogon nardus	0.93
Ocimum basilicum	2.66
Ketoconazole	7.63
LC1	7.63
LC2	7
LC3	6.83
LC4	6.2
LC5	5.76
CL1	3.26
CL2	2.93
CL3	2.53
CL4	3.76
BL1	2.76
BL2	3.26
BL3	3.73
BL4	3.73
BL5	6.26
LB1	7.46
LB2	7.53
LB3	7.23
LB4	6.46
BC1	2.49
BC2	2.62
BC3	2.41
BC4	2.16
BC5	1.69
CB1	1.26
CB2	1.26

CB3	1.06
CB4	1.06
LBC1	7.66
LBC2	7.6
LBC3	7.46
LBC4	7.63

Table 17. Zone of inhibition readingsfor all the formulations of essential oils.

Formulations	**MIC (in µl/ml) against *microorganism; Trichophyton tonsurans***
Cymbopogon citratus	1
Cymbopogon nardus	400
Ocimum basilicum	500
Ketoconazole	0.1
LC1	5
LC2	10
LC3	25
LC4	95
LC5	125
CL1	380
CL2	295
CL-3	240
CL-4	165
BL-1	305
BL-2	260

Table 18. MIC values for all the formulations of essential oils

It is clear that the antifungal effects of essential oils used for skin disorders can be either valuable or unfavorable and requires a thorough further scientific investigation of the phytochemistry, toxicity and other pharmacological activities. It is also suggested that the

essential oils are screened for antifungal properties against T. tonsurans and studies on the isolated compounds be subjected to these pathogens of specific dermatological relevance. The impact on the use of traditional medicines for the treatment of fungal infections of skin can further pilot safer alternatives compared to the existing synthetic treatments which are very aggressive and have severe side.

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