

IN VITRO EFFECT OF SOME VEGETABLE OILS AND PURE GHEE ON SPORE GERMINATION OF SOME DERMATOPHYTES

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The effect of some vegetable oils and pure ghee on germination of spores and growth of 2 selected dermatophytes viz. *Microsporium gypseum* and *Trichophyton simii* *in vitro* was studied while oil of *Brassica campestris*, pure ghee and *Cinnamomum camphora* were found excellent inhibitors in case of both test fungi, other oil such as *Ricinus communis* and *Olea europaea* were less effective inhibitor. The oil of *Embllica officinalis* was promotary for *M. gypseum* but weak inhibitor for *T. simii*. The other vegetable oils such as *Sesamum indicum*, *Cocos nucifera* and *Arachis hypogea* were found stimulatory to spore germination of both test fungi tested.

Keywords : Dermatophytes; Pure ghee; Sporulation; Vegetable oils.

Fungi cause both superficial and internal mycoses. These mycoses though normally not lethal, are unpleasant and difficult to cure and cause considerable economic losses. Basically the dermatophytes are soil saprophytes¹. The use of antimycotic drugs for tinea diseases (ring worm) has been in practice since long and it has been recognized as an effective means of control of dermatophytoses¹⁻³. With time, newer preparation of antimycotic drugs are constantly being manufactured against dermatophytoses of human-beings but still the incidence of dermatophytoses has hardly decreased during the past years. The oral treatment with Griseofulvin is still found effective against dermatophytoses⁴. This drug could not be accepted as a routine treatment for every case because it is expensive and the duration of treatment is long. Investigations for developing a cheap, non-allergic but effective broad spectrum anti-mycotic drug are being conducted in various laboratories of the world. Therefore, an attempt has been made to study the effect of certain oils (vegetable) and pure ghee on dermatophytes which were less expensive and non allergic to skin. Antimicrobial activities of different oils have been reported by various workers⁵⁻¹⁵.

For this purpose two fungi *Microsporium gypseum* and *Trichophyton simmi* were used. These fungi were isolated from soil through hair bait technique¹⁶.

Oil of *Ricinus communis*, *Cocos*

nucifera, *Embllica officinalis*, Ghee, Ghee+Camphor, *Arachis hypogea*, *Brassica campestris*, *Olea europaea* and *Sesamum indicum* were tested against two test fungi.

From the pure culture of 10 days old test fungi viz. *M. gypseum* and *T. simmi* spore suspension was prepared, then a single drop of spore suspension was mixed in one drop of oil on a cavity slide and incubated at 100% humidity in a humidity chamber for 24 hours at 25±2°C. The spore suspension without oil incubated similarly served as control. The results on spore germination of each test material was recorded. Growth inhibition or acceleration was calculated by the following formula¹⁷.

$$\text{Inhibition (-) or stimulation (+)} = \frac{T-C}{C} \times 100$$

where,

C = growth rate of control (in 24 hour)

T = growth rate of treated fungus

The result of the effect of these oils and mixture on test fungi are shown in the table 1.

The effect of oils and pure ghee (Desi ghee) *in vitro* on spore germination of the test fungus was studied (Table 1) and it was found that oil of *B. campestris*, was excellent inhibitor (100%) in case of both test fungi. Pure Ghee showed 98% inhibition in case of *M. Gypseum* and 95% inhibition was reported in case of *T. simii*. The mixture of Ghee with *C. camphora* was also found 90% inhibitor in case of *M. gypseum* and

Table 1. Effect of different oils on spore germination of *M. gypseum* and *T. simii*.

| Oils used | <i>M. gypseum</i> | <i>T. simii</i> |
|--|-------------------|-----------------|
| Castor oil (<i>Ricinus communis</i> L.) | -55.0 | -50.0 |
| Coconut oil (<i>Cocos nucifera</i> L.) | +10.0 | +8.0 |
| Emblica oil (<i>Emblica officinalis</i> Gaertn) | +5.0 | -10.0 |
| Ghee (Pure Saras ghee - Jaipur Dairy) | -98.0 | -95.0 |
| Ghee & Camphor (<i>Cinnamomum camphora</i>) | -90.0 | -95.0 |
| L. Nees and Eberm | | |
| Groundnut oil (<i>Arachis hypogea</i> L.) | +4.0 | +8.0 |
| Mustard oil (<i>Brassica campestris</i> L.) | -100.0 | -100.0 |
| Olive oil (<i>Olea europaea</i> L.) | -10.0 | -20.0 |
| Sesame oil (<i>Sesamum indicum</i> L.) | +8.0 | +15.0 |

(Percentage of stimulation = + and inhibition = -)

95% inhibition in case of *T. simii*. While inhibition due to oil of *R. communis* was only about 50% in spore germination. In case of *O. europaea* oil, inhibitor did occur but it was very slow and meagre for both the test fungi. *E. officinalis* oil was weak inhibitor for *T. simii* and was promotary for *M. gypseum*. Oil of *C. nucifera*, *A. hypogea* and *Sesamum* turned out to be stimulatory for both the test dermatophytes. It is a good step in future towards non-allergic and economic measures to control tinea diseases and therefore the vegetable oil of *B. campestris*, Ghee, Pure Ghee mixed with *C. camphora* can be used for *in vivo* study.

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