

<b>Thesis Title</b>	The Efficacy of <i>Calendula Officinalis</i> Extract on the Mortality of <i>Demodex Folliculorum</i>
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## ABSTRACT

**Background:** A high density of *Demodex folliculorum* along with alteration in skin homeostasis has been associated to *spectrum* of demodicosis. Even though many treatments are available, yet the treatment hasn't been satisfactory and there is growing need of alternatives therapies. The *Calendula officinalis* is thought to have anti-inflammatory and anti-microbial properties, and this hasn't been tested for *Demodex* mite till date. This is the first experimental study to reveal that *Calendula* extract doesn't have direct anti-parasitocidal effect on the *Demodex* mite *in vitro*, but still anti-inflammatory properties of the *Calendula* can help to control the inflammation and thereby maintaining the balanced skin homeostasis. Thus, indirect skin rejuvenating potential of the plant might help to maintain the parasitostasis thus preventing the onset of demodicosis and still allowing *Demodex* to live as commensal on human skin without posing any threat.

**Objective:** To study the efficacy of *Calendula officinalis* floral extract on the mortality of *Demodex folliculorum*.

**Methods:** *Demodex* mites collected from patient as hospital waste. A total of 352 slides from patients were collected using skin scraping, squeezing, and Standardized Skin Surface Biopsy (SSSB). They were then exposed to different test agents: including *Calendula Officinalis* extract of different concentration, ivermectin 1%, coconut oil, and immersion oil. Group was randomized by introducing each chemical to a group of 10 mites. Mortality effect was assessed under a microscope based on complete immobility even after needle stimulation. Survival time (ST) from chemical exposure to full immobility was recorded and compared across groups. The experiment was repeated thrice for reliability, ensuring reliable comparison of different chemicals on mite survival.

Results: The *in vitro* experimental study demonstrated that the floral extract of the *Calendula officinalis* didn't have direct parasitocidal effect on the *Demodex* mite even at maximum concentration (100% w/v) and hence wasn't discovered more efficient than ivermectin in killing the *Demodex* mite. Similar effect was observed in case of coconut oil and immersion oil. The efficacy of acaricidal effect on *Demodex* mites follows as: ivermectin 1% > *Calendula officinalis* =coconut oil =immersion oil.

Conclusion: *Calendula officinalis* extract although failed to show parasitocidal effect, its anti-inflammatory potential, can be used to reduce skin inflammation and thus prevent demodicosis. By promoting a balanced skin environment, it helps to prevent excessive *Demodex* mite proliferation. These properties make *Calendula officinalis* a valuable adjunct in inflammation control, indirectly supporting parasitostasis.

**Keywords:** Acaracides, *Calendula*, *Demodex*, Demodicosis, Efficacy, Mortality, Survival Time (ST)