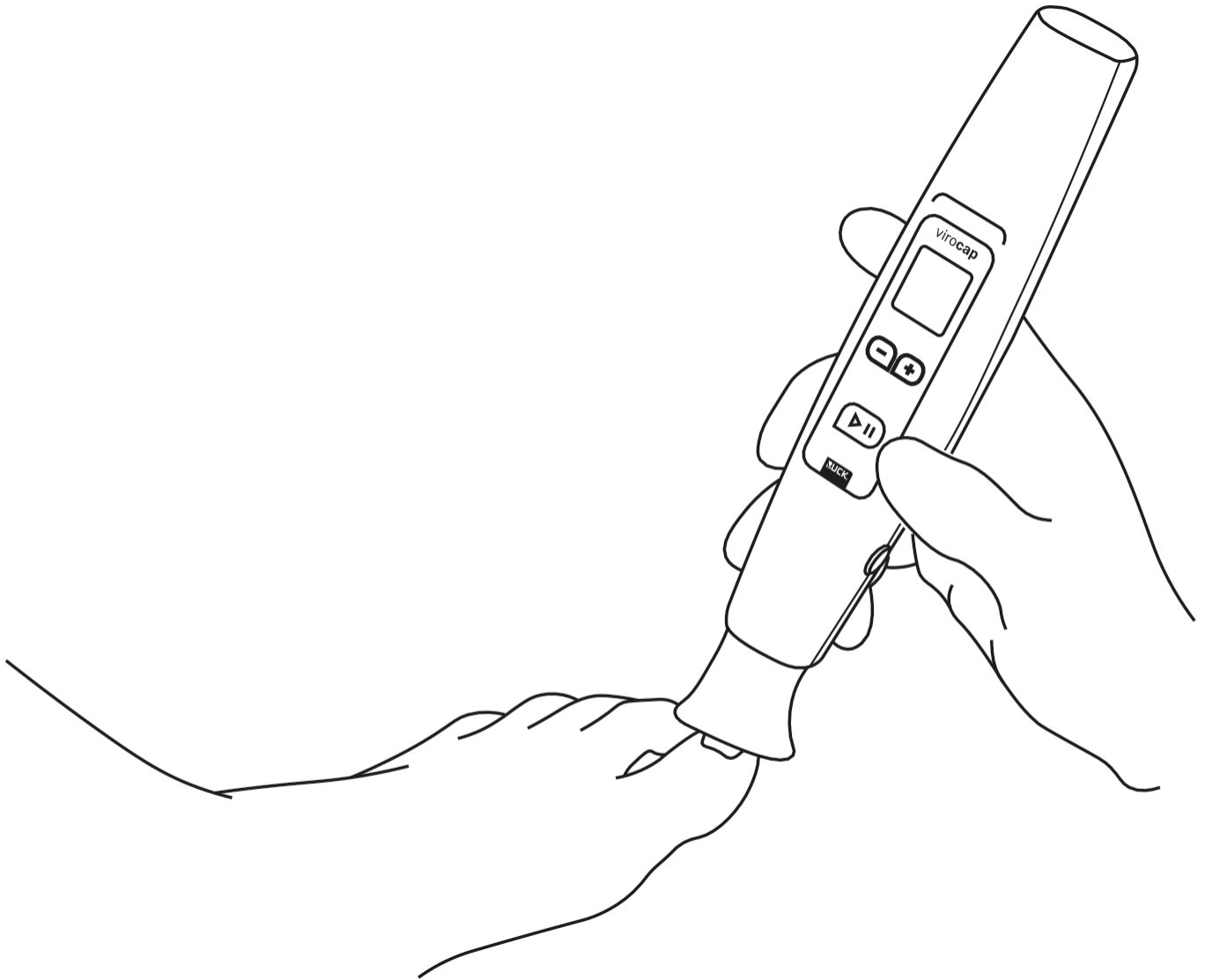


Antifungal effect: Cold plasma as an application booster

In vitro study of the antifungal efficacy against conidia/spores and mycelia (fungal networks) of *Trichophyton rubrum*



1. Aim of the study

To assess the antifungal efficacy of RUCK ViroCap cold plasma as monotherapy and when used in combination with peclavus AntiMYX tincture.

2. Results at a glance

- > RUCK ViroCap cold plasma reduces Trichophyton spores by more than 99% yet after just a single 2-minute treatment.
- > RUCK ViroCap cold plasma reduces the mycelial growth of Trichophyton rubrum thanks to twice-per-week treatment. The effect is significantly enhanced thanks to five-times-per-week treatment.
- > peclavus AntiMYX tincture reduces mycelial growth more effectively than RUCK ViroCap cold plasma when used five times per week.
- > A twice-per-week treatment with RUCK ViroCap Cold Plasma, when used in combination with a five-times-per-week treatment with peclavus AntiMYX Tincture, has the strongest effect on mycelial growth.

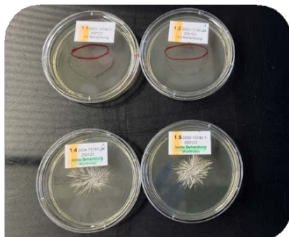
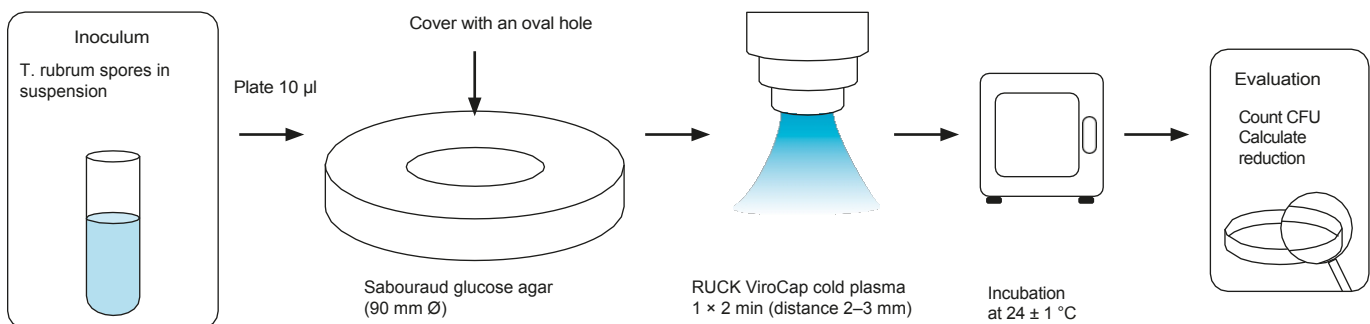
3. Test procedure and results

The investigations were performed under standardised laboratory conditions. Trichophyton rubrum was used as the test strain, and Sabouraud glucose agar as the growth medium.

Study 1: Antifungal effect of RUCK ViroCap cold plasma on spores of T. rubrum

A spore suspension of the test strain was plated centrally on Sabouraud glucose agar. Treatment was carried out once for 2 minutes. Untreated negative controls were included.

Experimental setup – schematic diagram



Test result:

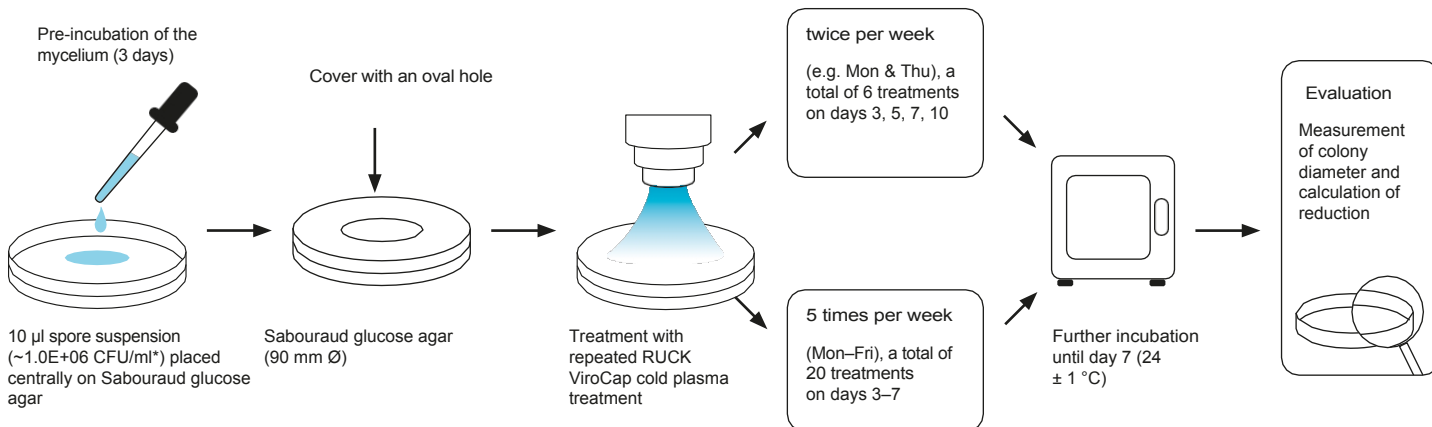
- > Visual assessment after 2 days
- > Top row: plates with spores after a single treatment
- > Bottom row: plates with untreated spores (negative control)

The number of viable T. rubrum spores was reduced by more than 99% (more than 2 log₁₀ levels) thanks to a single 2-minute treatment.

Study 2: Antifungal effect of RUCK ViroCap cold plasma on *T. rubrum* mycelia

T. rubrum mycelia were treated with RUCK ViroCap cold plasma for 2 minutes at a time over a period of 4 weeks. Some of the plates were treated twice in each of weeks 1 and 2, and once in each of weeks 3 and 4 (a total of 6 treatments). The other group was treated five times in each of the four weeks (a total of 20 treatments). Untreated negative controls were also included.

Experimental setup – schematic diagram

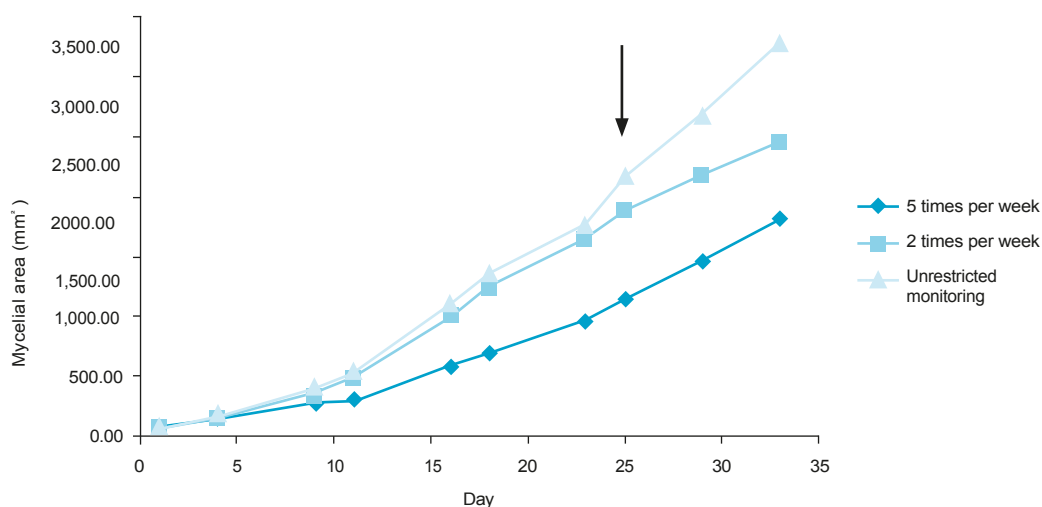


Negative control: identical setup, but without treatment with RUCK ViroCap cold plasma

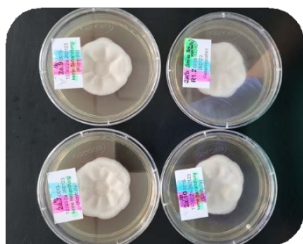
Results of the investigation:

The size of the mycelia was determined continuously on defined test days. Following the final treatment (arrow), the mycelia were further observed and their size measured. The following figure shows the areas of the mycelia (untreated, treated twice per week and treated five times per week).

Mycelium sizes of *T. rubrum* following treatment with RUCK ViroCap cold plasma



Images of mycelium after 23 days



without RUCK ViroCap cold plasma treatment



RUCK ViroCap cold plasma treatment twice a week



RUCK ViroCap cold plasma treatment 5 times a week

Evaluation

The increase in size of the untreated mycelium was most pronounced. In comparison, the treatment given twice per week showed a light inhibition of growth, whilst the treatment given five times per week showed a more pronounced inhibition.

Study 3: Antifungal effect of RUCK ViroCap cold plasma when used in combination with peclavus AntiMYX tincture on mycelia of *T. rubrum*

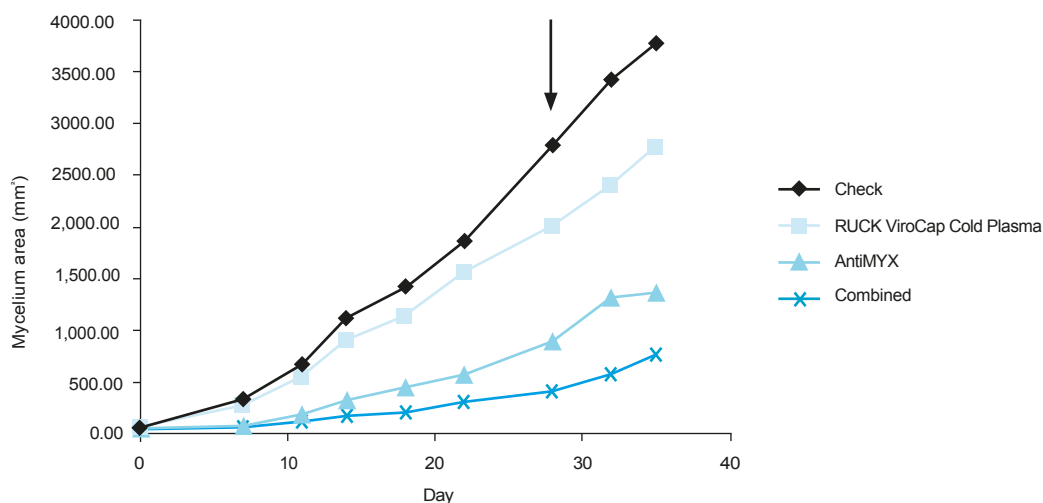
Mycelia of *T. rubrum* were treated with RUCK ViroCap cold plasma and, at the same time, with peclavus AntiMYX tincture over a period of 4 weeks. The cold plasma treatments were performed twice in each of weeks 1 and 2, and once in each of weeks 3 and 4 (a total of 6 cold plasma treatments).

Particularly, these mycelia were treated five times a week with Peclavus AntiMYX tincture. In parallel, mycelia were treated with cold plasma only or with peclavus AntiMYX tincture only. Untreated control samples were also included.

Results of the study:

The size of the mycelia was measured continuously on defined test days. After the final treatment (arrow), the mycelia were monitored further and their size measured. The following figure shows the areas of the mycelia (untreated control, RUCK ViroCap, AntiMYX tincture and a combination of RUCK ViroCap with AntiMYX tincture).

Mycelium sizes of *T. rubrum* following different treatments



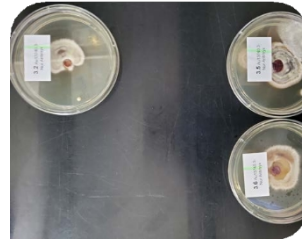
Images of mycelia after the end of treatment (28 days) and subsequent incubation for 4 days



Untreated control



RUCK ViroCap cold plasma
treatment twice a week



AntiMYX treatment 5
times a week



RUCK ViroCap cold plasma
treatment twice a week and
AntiMYX treatment five times a
week

Evaluation

Compared with the untreated control, the treatment administered twice per week with RUCK ViroCap cold plasma already resulted in a well-discernible inhibition of growth, which was, however, significantly surpassed by treatment with AntiMYX tincture alone. The combined treatment with RUCK ViroCap cold plasma and peclavus AntiMYX tincture had the strongest effect on growth inhibition.

Interpretation of the results of all studies

RUCK ViroCap Cold Plasma is highly effective against spores and inhibits the growth of mycelia that have already been made. Thanks to the combination of RUCK ViroCap Cold Plasma with peclavus AntiMYX Tincture, an even greater reduction in fungal growth is achieved.

Note: The results are based on in vitro studies.

Practical relevance

The results show that RUCK ViroCap Cold Plasma inhibits the growth of *T. rubrum* and, especially when used in combination with pecla-vus AntiMYX tincture, can be an effective approach in the supportive treatment of *T. rubrum* infections of the skin or nails.

Source

Dr Michael Lohmeyer's Microbiology Laboratory: Antifungal effect of CAPP, Report on Studies 1, 2 and 3. Unpublished documents commissioned by Hellmut Ruck GmbH, Neuenbürg, 2026.