Time as a dual factor

- A paradigm shift within disinfection

A joint project by

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Common standards

Standardized EN studies on disinfectants are based on protocols measuring the infectivity of a formulation in contact with a defined pathogen within a short time span (seconds or minutes).

Most antibacterial technologies rely on single-substance solvents or oxidizing agents, with no consideration for post-contact longevity once exposed to oxygen or abrasion.

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The challenge

In practice, most commonly touched surfaces, like door handles, drawers, keyboards, faucets and other shared equipment are not disinfected between each patient interaction. This is a source for potential contamination.

What is required is a fast acting disinfectant with long-term efficacy. This would eliminate the need for frequent reapplication on surfaces that are not included in the standard protocols.

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A new way to disinfect is required

In regards to disinfection, the dimension of time holds dual significance, marking a pivotal shift in our approach.

Long-term protection in disinfection is enhancing both infection prevention and sustainability.

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Clinical tests for long term efficacy

In previous experiments at other international labs test were conducted for long

E.coli was introduced at intervals, and efficacy was then assessed.

Existing clinical tests have demonstrated efficacy over various time spans, such as 24 hours, 7 days, and 30 days.

The tests were conducted on glass surfaces without any wear.

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RISE - New test protocol for wear and tear

Given the spread of the Coronavirus, an increasing number of customers and healthcare providers have sought reassurance regarding the effectiveness of our solution against this threat.

To address this concern, a new testing protocol was devised by RISE, designed to evaluate efficacy over time, while taking into account the wear and tear of the surface.

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RISE - New test protocol for wear and tear

The simplified test protocol for disinfecting surface coatings developed by Sahlgrenska University Hospital and RISE, was conducted in the following way:

1. Application of the formulation by a spray actuator
2. Waiting for the formulation to dry (up to 120 minutes)
3. Simulate recurring touches with 1 pound pressure
4. Observing the coating before and after wear
5. Tested the inactivation of SARS-CoV-2 at different number of touch or wear cycles on the coating.
6. Measuring the effectiveness of the formulation to eliminate the virus.

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Results

“We could not observe any major damage in the appearance of the coating for up to 80 cycles of abrasion, although the track marks from the abrasion was visible.”

Table 1. The log reduction of viral infectivity

Abrasion cycles	Log reduction $TCID_{50}$
0	3+ (99.9% reduction)
40	4+ (99.99% reduction)
80	4+ (99.99% reduction)

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Observations

- “The water-based formulation was easy to apply.”
- “The resultant films appeared reasonably uniform and very transparent.”
- “The binding to the metal surface was good.”
- “We could not observe any visual damage to the film.”
- “The viral infectivity of the disinfectant coating did not change much.”
- “The viral infectivity reduction was very good.”

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Conclusion

“The disinfectant coating from Hygiene of Sweden was effective in suppressing infectivity of SARS-CoV-2 responsible for COVID-19, with an observed 99.99% reduction in infectivity. This was maintained even after 80 cycles of mechanical abrasion under a 1 pound load.”

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