

Influence of Hydrogen Peroxide on Permeability of Resorcinol through Protective Gloves in Hairdressing

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Photo Gunnar Hagelström



NRL glove

Photo Gunnar Hagelström



PVC glove

Photo Gunnar Hagelström

Conclusion

The resistance against permeation of protective gloves used in hairdressing was not deteriorated by exposure to hydrogen peroxide.

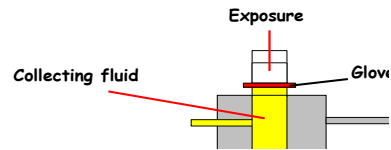


Fig. 1. Penetration cell LG-1084-SPCT

Introduction

The chemistry of hair dyeing is complex. The permeation of hair dye compounds through protective gloves is likely to be affected by other compounds in the hair dye formulation.

Aim

To investigate the influence of hydrogen peroxide on the permeation rate of resorcinol through protective gloves used by hairdressers.

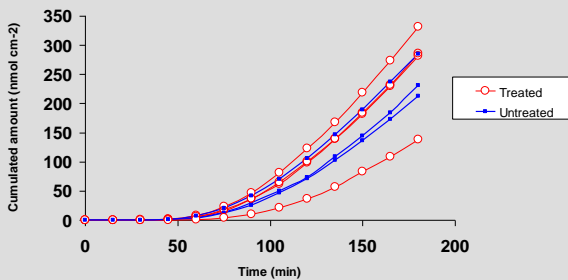


Fig. 2. Permeation curves for resorcinol through PVC gloves treated with hydrogen peroxide and through untreated PVC gloves.

Method

The permeation through gloves made of polyvinyl chloride (PVC) and natural rubber latex (NRL) was tested using a penetration cell LG-1084-SPCT, see Fig. 1. Permeation tests were performed with 10 % resorcinol. Gloves treated with 6 % and 30 % hydrogen peroxide before the permeation test was compared with untreated gloves. Breakthrough time (Lag-BT), and permeation rate at steady state (P_s) was calculated for each glove.

Results

The results of the test are shown in Table 1 and Fig. 2. No increase in permeation rate could be seen. There was a slight tendency for a decrease of the permeation rate after exposure to hydrogen peroxide.

Table 1. The arithmetic means and standard deviations for Lag-BT and P_s for resorcinol through gloves treated with hydrogen peroxide and untreated gloves

Glove	PVC		NRL	
	Lag-BT (min) n=5	P_s (nmol/cm ² min) n=5	Lag-BT (min) n=6	P_s (nmol/cm ² min) n=6
Untreated	99.3 ± 7.7	3.1 ± 0.5	155.0 ± 8.3	1.6 ± 0.7
Treated	98.4 ± 5.6	3.0 ± 0.7	160.0 ± 9.4	1.3 ± 0.5

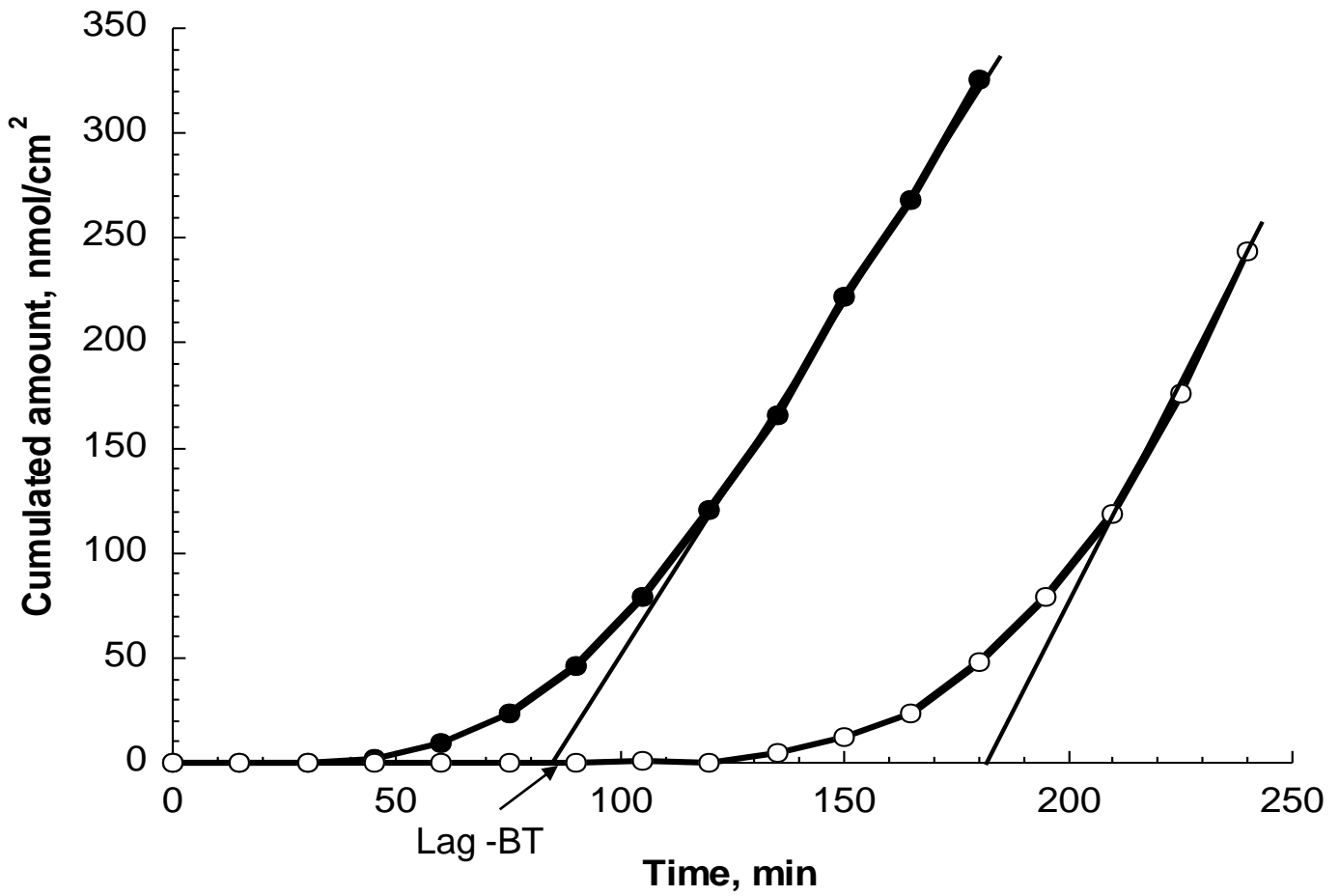
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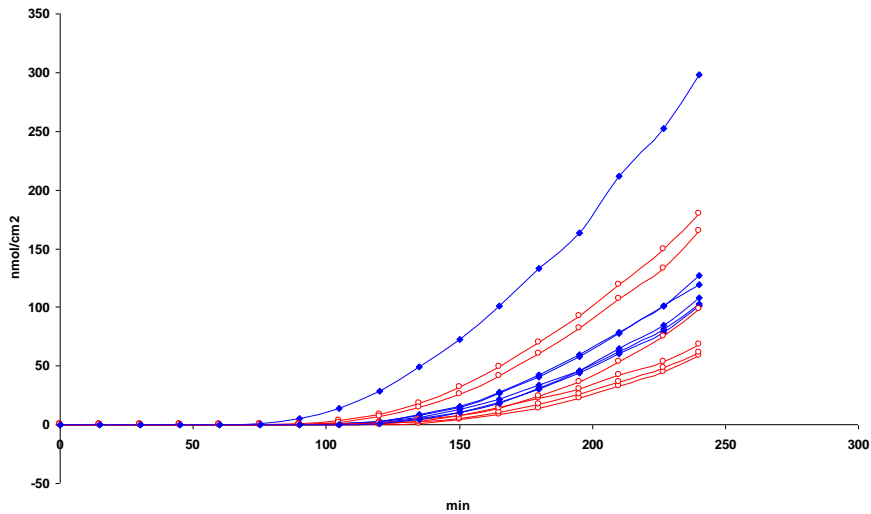
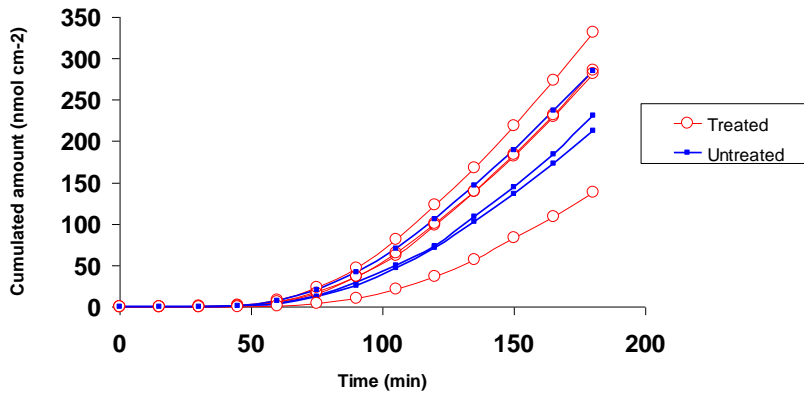


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Permeation curves for RES.

Lag-BT is achieved as the intercept with the x-axis.



Permeation curves for resorcinol through NRL gloves treated with hydrogen peroxide and through untreated PVC gloves.