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Waters, Laura J., Dennis, Laura, Bibi, Aisha and Mitchell, John C.

Surfactant and temperature effects on paraben transport through silicone membranes

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Highlights

- The presence of an anionic surfactant (sodium dodecyl sulphate), reduced the permeation of two model compounds, methylparaben and ethylparaben, through silicone membrane over a period of 24 hours.
- The degree of permeation reduction was proportional to the concentration of surfactant with a maximum effect observed at the highest surfactant concentration.
- Differences were seen around the critical micelle concentration (CMC) of SDS implying the effect was partially connected with the favoured formation of micelles.
- In contrast, the presence of a non-ionic surfactant (Brij 35) had no effect on the permeation of methylparaben or ethylparaben at any of the concentrations investigated, both above and below the CMC of the surfactant.
- An increase in experimental temperature appeared to enhance permeation, a finding that is in agreement with previously reported data. Interestingly, in the majority of cases this effect was optimum at the second highest temperature studied (45 °C) which suggests that permeation is a temperature-dependent phenomenon.