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# THE BENEFITS OF OLIGOMERIC SWITCH ADHESIVES IN ADVANCING WOUND CARE

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## PURPOSE

To develop medical pressure-sensitive adhesives that possess high peel force when in contact with the skin and low peel force when removed from the skin to advance a better continuum of advanced wound care and research.

## METHODS

The means by which the peel force of a skin adhesive has been modulated in the past has included physical approaches (peel angle, deformation of skin, substrate material, etc.) and chemical processes that implement a "switch" that can be activated during removal to significantly reduce the peel force of the adhesive. Herein, we report the application of oligoglycerol sebacate (OGS) as an adhesive "switch" that is activated via the contact with 50-91% isopropyl alcohol (IPA) to promote a rapid decrease in peel force during removal of a medical pressure-sensitive adhesive ("PSA"). Glycerol and sebacate were combine under a polycondensation reaction to form OGS. OGS was blended into a solvent based PSA in varying ratios and coated onto various films, including a nonwoven bandage and a polypropylene tape material. There was a 94% drop in peel force with the application of IPA.



## RESULTS

The decrease in peel force is approximately 94%, and occurs on a clinically manageable time-scale (3-10 seconds) as proven by time-dependent and concentration-dependent studies using analysis of variance (ANOVA). Statistical differences were also considered significant when  $p<0.05$ . The sample size of each group was  $N=10$ . Additionally, the bandages, tapes and dressings possess very high moisture vapor transmission rates (MVTR). This MVTR of the transparent dressings was shown to be greater than  $6200\text{g/m}^2$  at 24 hours.

