

A Comparison of Physical Characteristics of Selected Sterile Non-Adhering Dressings

by

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Characteristics of Sterile Non-Adhering Dressings

ABSTRACT

In order to investigate potential differences between similarly labeled and seemingly identical medical products, we chose to contrast the physical characteristics of some prominent, non-adhering, sterile dressings. The dressings evaluated included the (3 inch X 8 inch) Curity dressing (Kendall Healthcare Products, Mansfield, Ma, 02048), the (3 inch X 8 inch) Adaptic dressing (Johnson and Johnson Medical, Inc., Arlington, Tx, 76004-0130), the (5 inch X 9 inch) Xeroform Petrolatum Dressing (Sherwood Medical, St. Louis, Mo, 63103), and the (5 inch X 9 inch) Xeroform Petrolatum Dressing (Kendall Healthcare Products, Mansfield, Ma, 02048). The physical characteristics monitored included the total product weight and volume (minus packaging), the substrate (gauze) weight, the weight of water-soluble agent impregnating the substrate, and the weight of alcohol-soluble agent impregnating the substrate. Weights were monitored to the nearest one-hundredth of a gram, and volumes to the nearest one-hundredth of a milliliter. Data were analyzed using the Student's single tailed t-test, and results are presented as mean \pm one standard deviation of the mean (s.d.m.).

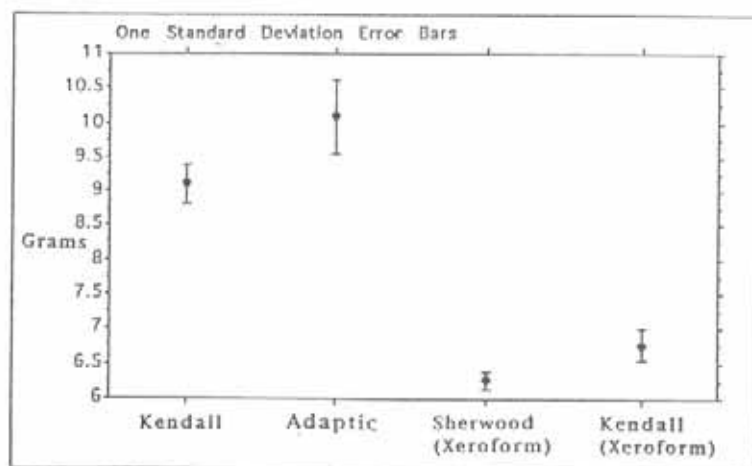
Accumulated data demonstrate no statistically significant difference in the studied parameters when comparing the two Xeroform dressings. However, data did demonstrate under the conditions of this study, that the Adaptic gauze lost more of its impregnating agent. This was reflected in the greater initial weight of the Adaptic dressing prior to extraction.

METHODS

Sterile, non-adhering dressings to be evaluated were removed from their respective packaging and immediately weighed to the nearest one-hundredth of a gram. After weighing, they were submerged in a graduated cylinder containing water at room temperature and their volumes determined by water displacement. Subsequently, one-half of the dressings being tested were transferred to graduated cylinders containing warm water and agitated for a period of two hours. These were then fan dried at room temperature for a period of twelve hours and weighed. The remaining one-half of the dressings being tested were transferred to a similar graduated cylinder, but containing 100% ethyl alcohol, and agitated for a period of two hours. At the end of the agitation period, these dressings were removed and fan dried at room temperature for a period of twelve hours and weighed. Dressings were then transferred from their initial solution into the alternate solution, agitated for a period of two hours, and fan dried at room temperature for twelve hours. Each dressing was then finally weighed in order to determine its substrate (gauze) weight, following exposure to both water and alcohol. Final dried total weights were then subtracted from initial total weights in order to determine the amount of combined water-soluble and alcohol-soluble material lost.

RESULTS

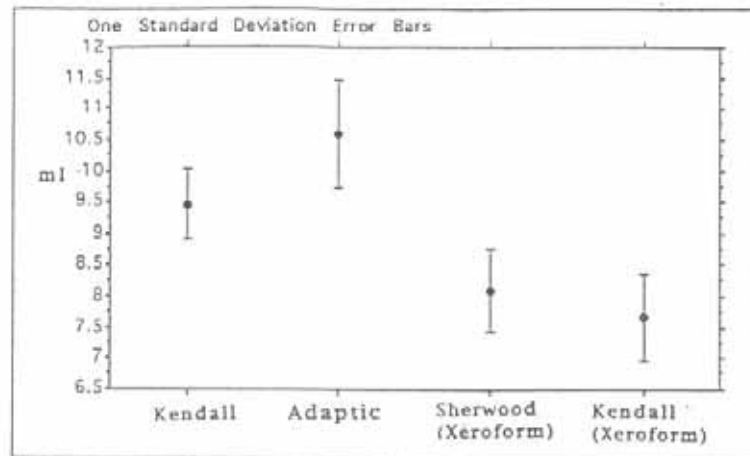
The average total weight (10.09 ± 0.54 gm) of the Adaptic dressing was greater ($p < 0.05$) than that (9.11 ± 0.28 gm) of the Kendall Curity dressing, while the total weight (6.77 ± 0.24 gm) of the Kendall Xeroform dressing was greater ($p < 0.05$) than that (6.26 ± 0.12 gm) of the Sherwood Xeroform dressing (Figure 1).



TOTAL INITIAL WEIGHTS

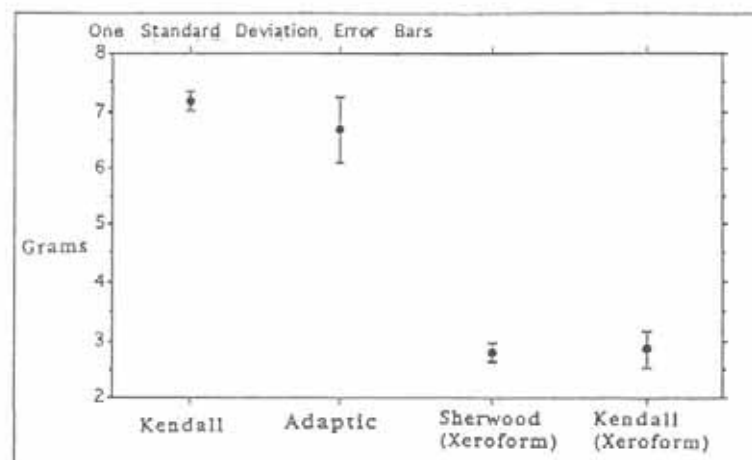
The average total volume (10.58 ± 0.87 ml) of the Adaptic dressing was not statistically different ($p < 0.05$) from that (9.46 ± 0.56 ml) of the Kendall Curity dressing, nor was the average total volume (7.66 ± 0.71 ml) of the Kendall Xeroform dressing statistically different ($p < 0.05$) from that (8.10 ± 0.66 ml) of the Sherwood Xeroform dressing (Figure 2).

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VOLUMES

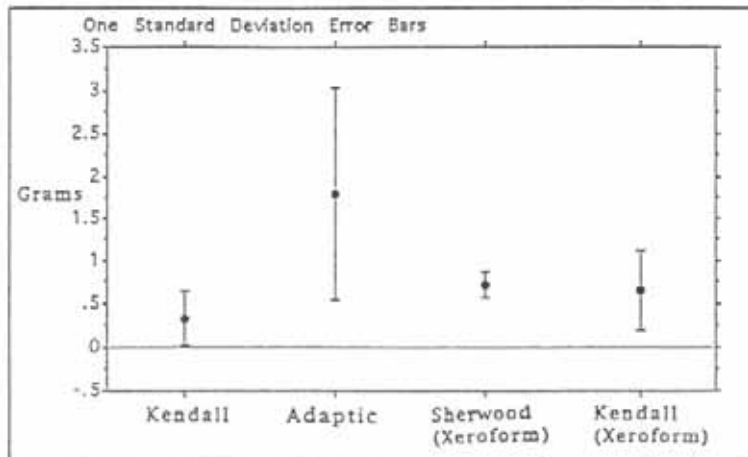
The average substrate (gauze) weight (6.67 ± 0.58 gm) of the Adaptic dressing was not statistically different ($p < 0.05$) from that (7.18 ± 0.17 gm) of the Kendall Curity dressing, nor was the average substrate weight (2.84 ± 0.31 gm) of the Kendall Xeroform dressing statistically different ($p < 0.05$) from that (2.78 ± 0.16 gm) of the Sherwood Xeroform Dressing (Figure 3).



WEIGHTS AFTER DRYING

The average weight of water soluble impregnating agent was not statistically different at the $p < 0.05$ level between the Adaptic (1.79 ± 1.24 gm) and the Kendall Curity (0.34 ± 0.32 gm) dressings (due to the relatively large standard deviation for the Adaptic dressing), nor was there a significant difference ($p < 0.05$) in this parameter when comparing the Kendall Xeroform dressing (0.65 ± 0.45 gm) with the Sherwood Xeroform dressing (0.72 ± 0.15 gm). (Figure 4).

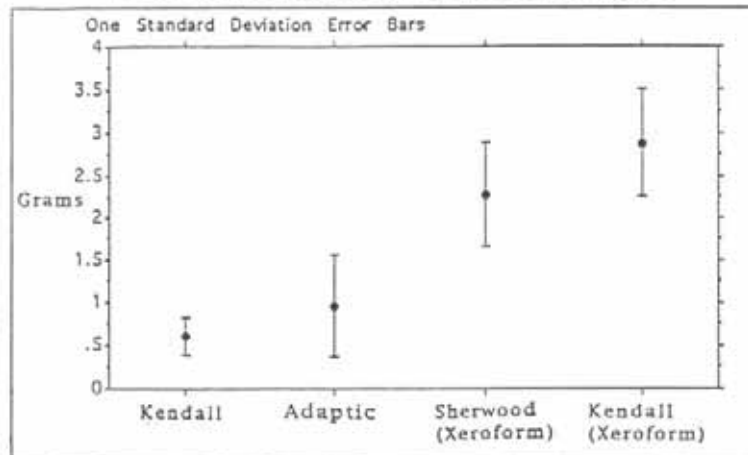
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WATER SOLUBLE WEIGHT LOST

There also was no demonstrable significant difference at the $p < 0.05$ level between the alcohol soluble impregnating agent, when comparing the Adaptic (0.97 ± 0.60 gm) with the Kendall Curity (0.61 ± 0.22 gm) dressings, or when comparing the Kendall Xeroform (2.87 ± 0.62 gm) with the Sherwood Xeroform (2.26 ± 0.61 gm) dressings (Figure 5).

ALCOHOL SOLUBLE WEIGHT LOST



DISCUSSION

These data demonstrate no statistically significant difference in the physical parameters studied, when comparing the Xeroform dressings. However, these data do demonstrate that, under the conditions of this study, the Adaptic substrate (gauze) lost more of its impregnating agent than the Kendall gauze. This is because: (1.) there was no difference in substrate (gauze) weight after both water and alcohol extraction and drying, but (2.) there was a significantly greater initial weight for the Adaptic dressing (Figure 6).

