

**LOCALIZED TISSUE WATER CHANGES ACCOMPANYING ONE
MANUAL LYMPHATIC DRAINAGE (MLD) THERAPY SESSION
ASSESSED BY CHANGES IN TISSUE DIELECTRIC CONSTANT IN
PATIENTS WITH LOWER EXTREMITY LYMPHEDEMA**

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ABSTRACT

Previous reports described the utility of assessing local tissue water via tissue dielectric constant (TDC) measurements. Our goal was to determine the suitability of this method to evaluate lymphedema changes. For this purpose, we measured changes in TDC produced by one MLD treatment in 27 legs of 18 patients with lower extremity lymphedema. TDC values were measured to a depth of 2.5 mm at the greatest leg swelling site before and after one MLD treatment. Girth at the target site was measured with a calibrated tape measure. TDC values, which range from 1 for zero water to 78.5 for all water within the sampled volume, were measured four times and the average used to estimate local changes. Results showed that in every case the post-treatment TDC was reduced from its pre-treatment value with percentage reductions (mean SD) of $-9.8 \pm 5.64\%$ ($p < 0.0001$). Girth changes were smaller being $-1.5 \pm 1.93\%$ ($p < 0.01$). We conclude that since TDC measurements reflect changes to a depth of about 2.5 mm whereas girth measurements reflect conditions of the entire cross-section, TDC assessment may be more sensitive to localized lymphedema changes. This finding suggests that TDC measurements are useful as complementary and perhaps as independent assessment methods of edema/lymphedema and treatment-related changes.