

VASCULAR DISEASE, VASCULITIS

AN IN VITRO INVESTIGATION ON THE INFLUENCE OF GLYCERIN AND GLUCOSE ON SODIUM TETRADECYL SULFATE FOAM STABILITY

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Introduction: Foam sclerotherapy has been gaining its popularity in varicose vein treatment since it is more potent than liquid sclerotherapy. The stability of foam is related to its potency and its degree of difficulty in clinical practice. Previous investigations have been done on foam stability with different gases and concentrations of sclerosants.

Objective: to investigate the influence of adding glycerin and glucose on sodium tetradecyl sulfate (STS) foam stability.

Material and method: 0.4 and 0.8 ml of additives (either 72% glycerin or 50% glucose) were added to different concentration (0.125%, 0.25%, 0.5%, 1%, 3%) of STS to make 2ml of sclerosing solution. Foam was created by pumping 2 syringes to and fro on a 3-way stopcock (Tessari method) with a liquid/air ratio of 1 to 4. Foam stability was measured by the half-life, which is the time it took for half the original volume of sclerosing solution to settle. The images of foams were taken by a digital microscope and analyzed by a high-resolution computational image analysis software for evaluation of foam quality.

Result: Half-life of foamed STS mixtures containing 72% glycerin were 1.71 to 3.17 times longer if the concentration of STS is 0.5% or more, and those of STS mixtures containing 50% glucose were 1.25 to 1.97 times longer 50% glucose with any given STS concentrations.

Conclusion: Adding glucose and glycerin solution into STS prolonged the mean half-life of foam by 52% and 98%, respectively. However, adding glycerin to an STS concentration lower than or equal to 0.25% could make foam less stable.