

Different holding conditions during transport and their effect on temperature

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Abstract: Routine surveillance of farm operations is crucial to ensure health of animals and minimize risk to public health. The shipping of tissue samples collected from farms and facilities is an essential part of providing an accurate assessment of the animal's health status. There can be a challenge preserving the integrity of the tissue during long transport times. Biological samples are often frozen to prevent normal decay. However, freezing can compromise the sample through the formation of ice crystals and the damaging of cell membranes and internal structures. Depending on the analysis being performed, this could potentially impact results. The integrity of kidney samples in different holding conditions during transport of Atlantic salmon (*Salmo salar*) kidney samples was evaluated. Temperature logging data determined that plastic coolers with frozen foam ice packs were not able to insulate contents from the external environment. Foam ice packs frozen at -80 ($^{\circ}\text{C}$) could not maintain the internal environment for longer than 33 hours. Foam ice packs held at both -20 ($^{\circ}\text{C}$) and 4 ($^{\circ}\text{C}$) could not maintain an internal environment for longer than 2 hours. Pre-chilling the cooler was effective in maintaining temperature for a longer time period. Changing the transport container of samples in the future or finding ways to pre-chill the container might be effective solutions in maintaining sample integrity through the transport process. The results of this study provide information that improves future transportation methods to preserve samples more effectively.

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