

# **Influence of Laminar Shear on Water Vapor Gradient in Lipid Films**

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Moisture migration between different phases in a food system is detrimental because it can damage the quality of food and shorten its shelf-life. As a solution, an edible lipid layer is often applied to limit moisture migration. There are many factors that can affect moisture permeability of the layer and the objective of this study was to evaluate the effect of laminar shearing on water vapor gradient in lipid layers. The shearing conditions were used to modify fat crystal size and arrangement of three fat systems, cocoa butter and two different blends of interesterified hydrogenated canola oil (IHCO). The lipids were solidified, made into thin layers, and incubated in a controlled humidity environment. Weight loss and moisture content of the crystallized fats were analyzed using periodical weighing and thermogravimetric analysis (TGA); and moisture permeability of the samples was calculated. The results showed that thermo-mechanical shearing conditions affected moisture permeability of the lipid films. Sheared cocoa butter layer was less permeable to moisture than the static one and there were mixed results on the two blends of IHCO. These findings are useful to the industry in terms of limiting moisture migration and prolonging shelf-life of food products.