عنوان مقاله:

Determining Surface Tension of Intestinal Mucus Using the Pendant Drop Approach

محل انتشار:

دومین کنفرانس بین المللی و پنجمین کنفرانس ملی تجهیزات و فناوری های آزمایشگاهی (سال: 1403)

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خلاصه مقاله:

Studying the intestinal mucus barrier, requires the consideration of the interfacial forces and surface tension of the mucus and lumen material. This study investigates the surface tension of biosimilar mucus (BSM) with varying viscosities (BSM-۱ and BSM-۲) and Hanks' Balanced Salt Solution (HBSS), simulating the intestinal lumen. Using the pendant drop technique and ImageJ software for analysis, the surface tension values were measured. The study revealed that BSM-۱ and BSM-۲ have significantly lower surface tensions (۴۱.۹۹ mN/m and ۴۷.۱۱ mN/m, respectively) compared to HBSS (۷۱.۶۹ mN/m) and deionized water (۷۱.۶۰ mN/m). These findings show the accuracy of the pendant drop technique for surface tension measurement and the importance of considering surface tension differences in studies involving the intestinal mucus barrier and capillary forces in microfluidic systems. This is the first report measuring the surface tension of intestinal biomimetic mucus, providing essential data for future two-phase flow simulations and experimental designs.

کلمات کلیدی:

Surface tension, Intestinal mucus barrier, pendent drop, ImageJ, Biosimilar mucus

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