

Physical and Microstructural Characteristics of Kefir Made of Milk and Colostrum

Title	Physical and Microstructural Characteristics of Kefir Made of Milk and Colostrum
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Abstract	<p>This research set out to compare the physical and microstructural characteristics of kefir made of milk, colostrum, and milk-colostrum mixes at various proportions. Kefir was made by adding kefir grains to 100% milk (P0), 80% milk + 20% colostrum (P1), 60% milk + 40% colostrum (P3), 40% milk + 60% colostrum (P4), 80% milk + 20% colostrum (P5), and 100% colostrum (P6). Fermentation was allowed under room temperature for 24 hours. The characteristics observed were color values, viscosity, pH, water holding capacity (WHC), syneresis, and microstructure. The result showed that the color of kefir (L^* value, lightness); (b^* value, yellow-blue), (a^*, red-green), and whiteness index (WI) was significantly affected by raw materials. The viscosity of kefir was also affected by the raw materials ($p < 0.05$), in which the kefir made from a mix of 80% milk and 20% colostrum showed the highest viscosity (1524.20 m.Pa.S). However, other characteristics such as pH, WHC, and syneresis were not significantly affected by raw materials. The microstructure of kefir made from 20 to 40% colostrum showed a string and compact protein tissues, while that made from 80 to 100% colostrum showed a clumping gel and concentration dominated by protein and fat tissues. This study demonstrated that milk kefir produced from milk-colostrum mixes posses a yellowish color (b^*), low whitenes index, negative a^* value, low lightness, whereas kefir made from 100% colostrum showed slightly greenish with low lightness level. Kefir with highest viscosity was produced from combined 80% milk and 20% colostrum. The microstructure of kefir produced from mixes with 40% and 60% colostrum showed a strong, tight, and compact microstructure of protein tissues.</p>
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Author	Dr TRIANA SETYAWARDANI, M.P.