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Milk whey, the by-product of cheese making, is potentially interesting for food products development due to its nutritional value. Besides, milk whey discharge to the environment is harmful because of its lactose content. The objective of this work was to use milk whey to develop an acerola-flavored drink with addiction of dietary fiber. Six beverage formulations with different concentrations of whey (0%, 20%, 40%, 60%, 80%, and 100%) were developed. Inulin was used to add value to the beverage, giving it prebiotic characteristics. The whey pH, measured immediately after obtaining it, was 6.59, and the average value of its acidity was 0.103% lactic acid. Concerning sensory acceptance of the developed drinks, a nine-point hedonic scale was used. The results showed no significant difference (p> 0.05) among the acceptance means of the samples with 0%, 20%, and 40% of whey, which varied between 6 and 8, placing the samples between the hedonic terms "slightly liked" and "liked a lot". The beverages with 40% and 60% of whey did not differ statistically (p> 0.05). The acceptance means varied between 6 and 7 (6 = slightly liked and 7 = moderately liked). Regarding the beverage formulations with 80% and 100% of whey, there was no significant difference (p> 0.05) between them, however they got low acceptance means, which ranged from 4 to 5 (4 = slightly disliked and 5 = indifferent). The results showed that the developed beverages are good alternatives to make use of milk whey.