The serum of milk, has approximately 6.4% solids and 93.6% water. The dried serum contains approximately 3% fat, 12% protein, 10% mineral and 75% lactose. The objective was to evaluate the replacement of water by the serum in the manufacture of French bread and evaluate the sensory appearance of the crust, crumb, flavor, aroma and texture. Three formulations have been developed, by replacing the water for serum, first with 0% (A) of the serum, second with 50% (B) and the last one with 100% (C). The test was performed using a hedonic scale with nine points. With the substitution of water by whey in French bread was possible to reach the desired result, most of the attributes evaluated was scored in the range between regularly and liked moderately, but only significant difference between samples with 50% and 100% of whey in the item texture, demonstrating that whey does not alter the sensory qualities of the bread. For the 3 samples, the specific volume was within viable, considering that the samples were considered to be well within the literature values for the specific volume. So, it’s possible to reduce the discharge of serum in nature, reducing water consumption in addition to aggregate nutritional value to the French bread with the replacement of all or part of the water by fresh whey in its manufacture.