Rice is the most important grain for food security of the humanity due to its nutritional balance and consumption in all continents. Parboiled rice is recommended by the Food and Agriculture Organization because of the high nutritional benefits achieved with the process. The parboiling process consists of grain hydration, starch gelatinization and retrogradation. The influence of the hydration time and its effect on texture and sensory parameters was evaluated in cooked parboiled rice. Long thin variety of paddy rice with high amylose was employed. Parboiling conditions: a) grains hydration in distilled water at 65°C for 4, 5 and 6h; b) gelatinization in autoclave (110°C, 0.5kgf.cm⁻², 10min); c) starch retrogradation in an industrial dryer at 45°C (until 13% moisture in the grains). Rice was cooked using 2.5:1 water/grain proportion. Thirty judges evaluated the sensory attributes in an unstructured scale of 9 cm containing descriptive terms. Texture parameters were evaluated in a texture analyzer. In the longer hydration time cohesiveness, hardness, elasticity, gumminess and chewiness of grains reduced in 10, 15, 20, 30 and 40%, respectively, compared to the shorter time. The longer hydration time increased in 70% the rice adhesiveness. Rice brightness was increased by 95% when hydrated for 6h due to higher lipid level in grains. After 6h the firmness increased 50%, while the color, smell and flavor increased 40, 55 and 60% respectively. The color, smell and taste were more acceptable when rice hydrated for 4h, while brightness, firmness and looseness after 5h.