In recent years, consumer interest on health issues has heightened demand for healthy foods such as fruit juices, which are important sources of minerals, vitamins and compounds that have positive influence on human health. The purpose of this work was to analyze the sensory characteristics of a mixed nectar of cashew apple (*Anacardium occidentale*, L.), mango (*Mangifera indica*, L.) and acerola (*Malpighia emarginata*, D.C.) pulps. Tasters are representing a total of 80 panelists for each session. The proportions of cashew apple, mango and acerola pulps in each treatment were determined according to a simplex design blends increased with 10 treatments. The ten formulations under study were subjected to sensory analysis by using a hedonic scale of nine points, which 9 represented "like extremely" and 1 "dislike extremely". The color, appearance, aroma and overall impression were evaluated. The mathematical description of the modeling mixtures was made by using the program Statistica in the version 7.0. The models obtained for the experimental responses were assessed in terms of its significance (p ≤ 0.05) and its correlation coefficients (R²). All formulations of mixed nectar of cashew apple, mango and acerola showed good consumer. The mango pulp should be added in higher proportions in the mixture because it promotes greater acceptance in all attributes analyzed, followed by acerola and cashew apple pulps.