A dosimetric study is performed on a newly designed Pd-103 radioactive source (model MED3633) for interstitial brachytherapy such as prostate implants. Its dosimetric parameters are compared with a current widely used Pd-103 source (Theraseed 200). Whereas outer dimensions of the two types of sources are similar, the inner structures are different. Each MED3633 seed has six linear spheres encased by a titanium shell, four outer resins are radioactive, and the inner two serve as radio-opaque X-ray markers, compared with Theraseed's two radioactive rods separated by an X-ray marker. Three measurements are done to characterize its dosimetric properties, a) air kerma strength determination using a well chamber; b) TLD irradiation in acrylic and custom-made wax phantom; c) autoradiograph using a verification film. The air-kerma-strength measurements indicated that the manufacture specified apparent activity of MED3633 is larger by 20% than that of Theraseed 200 for the same air-kerma strength. The relative and absolute dose rate constants, and the radial functions are obtained by the in-phantom TLD measurement. The results show the two types of sources are within 5% of each other and consistent with values adopted by TG43. Autoradiograph of the sources (with sufficient build-up) with XV film not only gives radial functions, but also anisotropy functions. Software was developed to analyze the films, and derive the desired functions. The radial functions and anisotropic factor Φan values (0.92 $\pm$0.05) derived from these films are consistent with adopted values by TG43. These results show that MED3633 and Theraseed 200 are equivalent dosimetrically.