The effective energies of various 6 and 10 MV photon beams produced by different accelerators are evaluated using LaRiviere=s formalism (British Journal of Radiation, 62,473, 1989). A spread is noticed in the effective energies for the same nominal energy machines. Dosimetric data of three 6 and 10 MV photon beams produced by Clinac accelerators are compared for a 10×10 cm²field size. Percent depth doses, wedge factors and out-put factors are found to agree mostly within 2%. The wedge angles from 90% to 40% iosodose levels are agreeing within 1 to 2°. The depth of isodose curves from 90% to 30% varied from 1 to 4 mm between the machines. A more detailed comparison of the data along with a brief discussion will be presented.