

Verification of the linearity of the source dwell time is an important Quality Assurance (QA) check for the Intravascular Brachytherapy (IVBT). Conventionally, linearity check was performed using a well chamber and electrometer. In this study, the XV-film and MD-55 Gafchomic film were employed. The GALILEO III System with P-32 source was used for this work. During the procedure, the 20 mm long P-32 source was automatically stepped one step or two steps to yield an equivalent source length of 40 mm or 60 mm, such that the treatment length covered to 32 mm or 52 mm. The source dwell time ranged from 70 seconds to over 300 seconds depending on the source strength and the position of the prescription point. An in-house designed device held the Ready-Pack XV-film against the adjustable polystyrene plates to produce the appropriate attenuation in order to obtain the optimal optical density for the films. The XV-films were irradiated with different source dwell time, then read out using a film scanning software. A similar technique was applied to the MD-55 Gafchomic film. The net optical density of the films vs. source dwell time was then analyzed. The R-Square values of the linear fit for the well chamber, XV-film, and MD-55 Gafchomic film measurement are 0.9999, 0.9938, and 0.9992 respectively. The results showed that the film dosimetry can be a useful tool in checking source dwell time linearity.