

## عنوان مقاله:

A study on slab-wooden dust-slab phantom for the development of thorax phantom

## محل انتشار:

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## خلاصه مقاله:

**Introduction:** The determination of accurate dose distribution is an issue of fundamental importance in radiotherapy, especially with regard to the fact that the human body is a heterogeneous medium. Therefore, the present study aimed to analyze the density and isodose depth profiles of 6 MV beam in a SP34 slab-wooden dust (pine)-SP34 slab (SWS) heterogeneous phantom. **Materials and Methods:** The density of SP34 slab, wooden dust of pine, and thoracic region of 10 patients were calculated using computed tomography (CT) images. The depths of isodose lines were measured for 6 MV beam on the CT images of the chest, SP34 slab phantom, and SWS phantom. Dose calculation was performed at the depths of 2, 13, and 21 cm in both phantoms. Furthermore, patient-specific quality assurance (QA) was implemented using both phantoms. **Results:** The mean densities of the lung, SP34 slabs, and wooden dust were 0.29, 0.99, and 0.27 gm/cc respectively. The mean depths of different isodose lines in the SWS phantom were found to be equivalent to those in actual patients. Furthermore, the percentage variation between the planned and measured doses was higher in the SWS phantom as compared to that in the SP34 phantom. Furthermore, the percentage variation between the planned and measured doses in patient-specific QA was higher in the SWS phantom as compared to that in the SP34 phantom. **Conclusion:** As the findings indicated, the density and isodose .depth profiles of the SWS phantom were equivalent to those of the actual thoracic region of human

## کلمات کلیدی:

Hounsfield number, patient specific quality assurance, SP34 slab phantom, thorax phantom, SWS phantom

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