Vitamin D deficiency is a recognized problem in Europe; this can be minimized by fortifying a broader range of foods. Our aim was to investigate the potential for enhancing the vitamin D content of pork from pigs raised in indoor facilities, by exposing the pigs to UVB for a period just before slaughter. Three groups of six pigs were exposed to 0, 0.7 or 1 SED/day for 28 days. A fourth group was exposed to 2 SED; this treatment was not completed due to mild erythema. The highest increase of vitamin D3 was achieved with 1 SED; the vitamin D3 content in loin was 3.7 ng/g; more than a factor of 2 higher compared to previously reported results from studies using 2000 IU/kg feed, the maximum allowed level in Europe. This is the first time an increase in the vitamin D content of pork has been reported as a result of using artificial UVB exposure of slaughter pigs in indoor facilities. However, the maximum production of vitamin D was probably not reached as a linear relationship between UVB dose and vitamin D content was found; therefore, the UVB-lighting method described still calls for further investigation to realise its full potential to enhance vitamin D in pork.