

Table 1: SPECT Radioisotopes

Pure Gamma ( $\gamma$ ) Emitters (arranged by increasing half-life)

<u>Nuclide</u>	<u>Z</u>	<u>Half-Life</u>	<u>keV</u>	<u>Decay Product</u>	<u>Chelator(s)</u>	<u>Notes</u>
$^{99m}\text{Tc}$	43	6 h	<b>140</b> 18	$^{99}\text{Tc}$	MAS <sub>3</sub> , HYNIC	Eluted from a $^{99}\text{Mo}$ generator in saline
$^{123}\text{I}$	53	13 h	<b>159</b> 27	$^{123}\text{Te}$		Compton $e^- \rightarrow 159 \text{ keV } \gamma$
$^{111}\text{In}$	49	67 h	<b>245</b> <b>172</b>	$^{111}\text{Cd}$	DOTA	Difficult to use with dose calibrator Free $^{111}\text{In}$ transferrin bound due to Auger $e^-$ (20% variability)
$^{201}\text{Tl}$	81	72 h	<b>70-80</b> 167 135	$^{200}\text{Hg}$		70-80 keV emission are x-rays
$^{67}\text{Ga}$	31	78 h	<b>93</b> <b>185</b>	$^{67}\text{Zn}$	DOTA	Free $^{67}\text{Ga}$ transferrin bound, lactoferrin excretion and intracellular
$^{51}\text{Cr}$	24	28 d	320	$^{51}\text{V}$		
$^{125}\text{I}$	53	60 d	35	$^{125}\text{Te}$		
$^{153}\text{Gd}$	64	240 d	97 103	$^{153}\text{Eu}$	DOTA	
$^{57}\text{Co}$	27	270 d	<b>122</b> 136	$^{57}\text{Fe}$		Calibration source for $^{99m}\text{Tc}$

Medically important emissions in **bold**.

Table 2: Mixed Gamma ( $\gamma$ )/Beta ( $\beta^-$ ) Emitters (arranged by increasing half-life)

<u>Nuclide</u>	<u>Z</u>	<u>Half-Life</u>	<u><math>\gamma</math>-ray keV</u>	<u>Decay Product</u>	<u>Chelator(s)</u>	<u>Notes</u>
$^{188}\text{Re}$	75	17 h	155	$^{188}\text{Os}$	MAS <sub>3</sub>	
$^{153}\text{Sm}$	62	46 h	103	$^{153}\text{Eu}$		Can perform bone scan during Rx
$^{67}\text{Cu}$	29	61 h	185 93 91	$^{67}\text{Zn}$		<i>In vivo</i> transmetallation a problem
$^{99}\text{Mo}$	42	67 h	1405 740 41	$^{99m}\text{Tc}$ $^{99}\text{Tc}$		
$^{186}\text{Re}$	75	3.8 d	137	$^{186}\text{Os}, ^{186}\text{W}$		MAS <sub>3</sub>
$^{133}\text{Xe}$	54	5 d	<b>81</b> 31	$^{133}\text{Cs}$		Gas Some fat absorption
$^{177}\text{Lu}$	71	6.7 d	208 113	$^{177}\text{Hf}$	DOTA	
$^{131}\text{I}$	53	8 d	<b>364</b> 637	$^{131}\text{Xe}$		
$^{137}\text{Cs}$	55	30 y	662	$^{137m}\text{Ba}$		$^{137m}\text{Ba} \rightarrow \gamma$ ; Calibration Source

Medically important emissions in **bold**.