

Re: Synthesis and Comparison of ^{99m}Tc -Enrofloxacin and ^{99m}Tc -Ciprofloxacin

TO THE EDITOR: In a recent article (1), the first sentence starts “Ciprofloxacin labeled with ^{99m}Tc . . .” This phrase is repeated throughout the article. This statement is internally contradictory. Ciprofloxacin contains only the elements carbon, hydrogen, fluorine, nitrogen, and oxygen. It does not contain technetium. Ciprofloxacin can be labeled with radionuclides of only these 5 elements. Pertechnetate apparently forms a stable complex with ciprofloxacin under reducing conditions, but this product is not technetium-labeled ciprofloxacin. It is a new compound with a unique set of chemical and biologic properties that may or may not be similar, but will not be identical, to ciprofloxacin. Similarly, the name ^{99m}Tc -ciprofloxacin implies that the technetium isotope or isotopes normally present in ciprofloxacin have been replaced with ^{99m}Tc . ^{18}F -Ciprofloxacin and ^{14}C -ciprofloxacin are viable names for suitably labeled versions of the compound, but ^{99m}Tc -ciprofloxacin is not. The same logic applies to ^{99m}Tc -enrofloxacin.

This may seem like semantic pedantry harping on arcane rules of chemical nomenclature, but it is in fact central to our discipline. Reproducible experiments can be performed using labeled compounds only if we know what that labeled compound is. It is critical to distinguish between labeled compounds and labeled derivatives of compounds. Naming conventions have developed

over the years so that a systematic name will exactly describe the compound to which it is applied. This often leads to cumbersome names—indeed, the systematic name for ciprofloxacin is 1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-3-quinolinecarboxylic acid—that have to be shortened or trivialized for routine usage. However, these trivial names are tied to the systematic name, and variations on the trivial name should still follow systematic rules. Thus, we have ^{131}I -iodinated albumin, not ^{131}I -albumin. Variations, induced by usage, are inevitable, but variations that are internally contradictory should be avoided at all costs. Such internally contradictory names serve only to confuse both the reader and indexing systems.

Until the structure of these compounds has been determined, they should be described as ^{99m}Tc complexes of ciprofloxacin or enrofloxacin. When the structure of the complexes is known it will be possible to assign a meaningful name to the compounds.

REFERENCE

1. Siaens RH, Rennen HJ, Boerman OC, Dierckx R, Slegers G. Synthesis and comparison of ^{99m}Tc -enrofloxacin and ^{99m}Tc -ciprofloxacin. *J Nucl Med.* 2004;45:2088–2094.

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