Recent advances in $^{99m}$Tc radiopharmaceuticals

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$^{99m}$Tc radiopharmaceuticals play an important role in widespread applications of nuclear medicine. When $^{99m}$Tc radiopharmaceuticals first came into use, major efforts were directed toward the development of $^{99m}$Tc radiopharmaceuticals for bone imaging and for the excretory functions of the liver and kidneys. In the past 20 years, a significant advance has been made in technetium chemistry, which provided $^{99m}$Tc radiopharmaceuticals for assessment of regional cerebral and myocardial blood flow. Recent efforts have been directed toward the design of $^{99m}$Tc-labeled compounds for estimating receptor or transporter functions. A number of bifunctional chelating agents that provide $^{99m}$Tc labeled proteins and peptides of high in vivo stability with high radiochemical yields have also been developed. More recently, organometallic technetium and rhenium compounds have been introduced as another class of $^{99m}$Tc radiopharmaceutical design. In this manuscript, recent progress in $^{99m}$Tc radiopharmaceuticals is reviewed with the major emphasis laid on key innovations in this field to provide the $^{99m}$Tc radiopharmaceuticals available today.

Key words: technetium-99m, radiopharmaceutical, bifunctional chelating agent, conjugated design, integrated design, peptides, proteins