Stannous ion is widely used in the preparation of 99mTc-radiopharmaceuticals. During the investigation of various labeling procedure for 99mTc-penicillamine and 99mTc-bleomycin, a great variability of 99mTc complexes were observed. This variability was traced as due to the feasibility either of stannous ion or the reduced 99mTc to easily undergo hydrolysis and/or oxidation. Although the chemical state of 99mTc has not been yet well defined, a tetravalent 99mTc, in a monomeric state as 99mTcO2⁺ is estimated as coordinated with the ligand in the monomer complex, but a hydrolyzed 99mTc is considered in the polymer complex.

The amount of the reduced agent is proposed as mainly responsible for the polymer type complex. Through a Sn₂(OH)₆²⁺ trimer species, a hydrolyzed 99mTc, negatively charged, might react and form an intermediate complex, which can then proceed toward different other 99mTc species. But, when as low concentration as $1 \times 10^{-8} - 1 \times 10^{-9}$ mole of Sn²⁺ was used, a stable monomer species was observed.

This monomer complex has shown a better biological or clinical potentiality than the polymer as reported elsewhere. So, the need of an extremely low concentration of Sn²⁺ and a device to avoid the feasibility to undergo hydrolysis, leads us to think on the adsorption of the Sn²⁺ on cationic exchange resin.

The entire procedure for preparing the labeled compound consisted only in adding to the solution containing the ligand (penicillamine or bleomycin) in a buffer solution plus the 99mTcO₄⁻ solution from a generator, 1–2 mg of the Sn²⁺-resin, and then gently mixing the solution with up-side-down movement before a milipore filtration.

This simple, easy and rapid method promises to be of practical value as a Kit method for labeling monomer complex with 99mTc.