

Letters to the Editor

Determining Amount of Hydrolyzed-Reduced Technetium: Alternate Method

In reading the case report "Bone Marrow Visualization with Tc-99m Disofenin" (1), I took particular note of the use of Gelman ITLC-SG and saline to determine the amount of hydrolyzed-reduced technetium in a preparation showing marked bone marrow uptake. In my experience with this radiopharmaceutical the use of this system can lead to finding artificially high values for the content of hydrolyzed-reduced (colloidal) activity. Certain technical variations may further increase the apparent level of colloid.

For example, a strip, which is developed in 0.9% sodium chloride to a distance of 5 cm above the point of spotting and cut into 1-cm portions, shows 6% of the activity to be at the origin (the two strips 1 cm above and below the point of spotting). Dividing the strip half-way between the point of spotting and solvent front reveals about 40% of the activity on the lower half of the strip. If the spot is allowed to dry before development, the origin contains 12% of the activity and the lower half about 60%—yet the preparation shows the expected pattern of biodistribution.

Therefore, without knowing the exact technical details of the author's analytical method, I would be hesitant to agree that the pattern of distribution reported was due to an extremely high level of colloid. A colloid with such selective marrow uptake would be a useful improvement on currently known agents (2,3).

A better system for the determination of hydrolyzed-reduced activity in disofenin is Gelman ITLC-SG and distilled water (4). Typical results show less than 1% activity at the origin and less than 10% in the lower half of the strip. An alternative that I use is ITLC-SG and methanol-water (50/50) as solvent. This shows less than 1% activity in the lower half of the strip while the Tc-99m disofenin travels to the solvent front with minimal trailing, allowing a reliable determination of colloidal activity.

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References

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2. Kloiber R, Damte B, Rosenthal L, et al. A crossover study of effect of particle size on the distribution of radiocolloid in patients. *Clin Nucl Med* 1981;5:204-6.
3. McAfee JG, Subramanian G, Aburano T, et al. A new formulation of Tc-99m minimicroaggregated albumin for marrow imaging: comparison

with other colloids, In-111 and Fe-59. *J Nucl Med* 1982;1:21-8.

4. Majewski W, Zimmer AM, Spies SM, et al. Radiochemical evaluation of commercial iminodiacetate hepatobiliary radiopharmaceuticals. *J Nucl Med Technol* 1981;9:185-7.

Reply

We appreciate Mr. Mayer's comments about the chromatographic procedure reported in our article (1).

The only chromatographic system available at the time was the Q.C. Analyzer® from Squibb. This system uses ITLC-SG and 0.9% saline for the determination of hydrolyzed-reduced technetium in some preparations. Specifically, a 20 cm × 1 cm strip cut 5 cm from the end and counted wet was used (2). Thus, Mr. Mayer's comments about total length of 5 cm, cutting in half, and wet vs dry do not apply.

We agree that the Gelman ITLC-SG/water system is better but this technique (3) was published in the Journal after our case report occurred.

Although the percentage of hydrolyzed-reduced technetium may be artificially high, the point remains that bone marrow visualization was apparent on the images.

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References

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2. Resnikov, PD. The Squibb Q.C. analyzer-ITLC system. *Transient Equilibrium* 1978;7:4-12.
3. Majewski W, Zimmer AM, Spies SM, et al. Radiochemical evaluation of commercial iminodiacetate hepatobiliary radiopharmaceuticals. *J Nucl Med Technol* 1981;9:185-7.

To All Interested Technologists

I recently attended a one-day nuclear cardiology symposium at Johns Hopkins Hospital in Baltimore, MD, and was so impressed with both the quality of the material presented and the professionalism of the presentation itself that I wanted to share my feelings.

The information presented was concise, geared towards technologists, and on a level that was refreshing to encounter. I would highly recommend that all those seeking to gain a more in-depth understanding of this growing aspect of our profession consider attending this program. I understand it is going to be offered again in the future.

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