Defective ^{198}Au-Colloid

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We would like to report a recent experience emphasizing the importance of using a dose calibrator before administering any radiopharmaceutical. We routinely measure the total activity of all gamma-emitting radiopharmaceuticals in their containers. This provides a check on the assay information found on the label. After withdrawing the dose volume, computed from information on the label, we then measure the amount of activity remaining in the container and calculate the amount withdrawn.

Recently, in preparing doses of ^{198}Au-colloid obtained from a commercial supplier, we found that the dose volumes had less than 60% of the amount of activity expected on the basis of the label. When the doses were withdrawn, nothing abnormal was noted about the appearance of the preparation; the color was homogeneous and the colloidal material appeared uniformly dispersed. However, after noting the discrepancy and on re-inspecting the container, we found a small amount of red precipitate adhering to the bottom of the bottle (Fig. 1). With agitation some of the material could be temporarily resuspended. We contacted the radiopharmaceutical company, and they thought that the primary cause of the colloid agglomeration was related to the vial's presumable exposure to excessive heat.

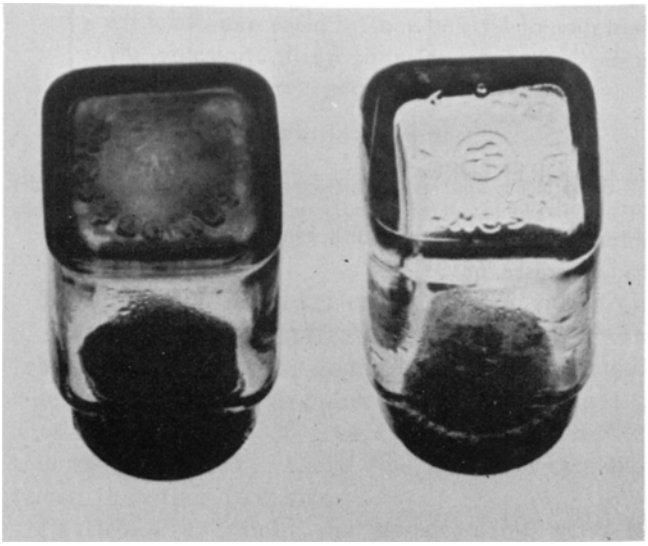

FIG. 1. Vials shown here contain two separate shipments of ^{198}Au-colloid. Both are empty, but one on left has colloid adherent to bottom of bottle while no such discolored material is observed in other.

We had not previously experienced this difficulty with ^{198}Au-colloid. Unlike other colloids, especially those with larger particles such as macroaggregated albumin that must be resuspended by agitation before withdrawing, the suspensions of ^{198}Au-colloid have been very stable and homogeneous. This apparently is not always true. Had the container been agitated before withdrawing the doses, a discrepancy in the activity might not have been found and the nonhomogeneity might have gone unnoticed. We therefore would recommend that preparations of ^{198}Au-colloid not be agitated before doses are withdrawn. Such nonuniformity of the suspension or any precipitation might then be detected by comparing the specific activity noted on the label with the reading of the dose calibrator.

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