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93 DETERMINATION OF GALLIUM IN BIOLOGICAL SAMPLES. K. Nakamura & H. Orii. Tokyo Metropolitan Institute of Medical Science.

To clarify the effect of carrier on the accumulation of Ga-67 to the tumor cells, it is necessary to know the content of stable Ga, as well as Ga-67, in the cell or tissues. We report the comparison of several methods for the determination of stable Ga in biological samples. Spectrophotometric methods; all three methods (Rhodamine B, Oxine, and PAN methods) are those by the solvent extraction, and therefore, it is possible to measure directly from homogenized solution without the wet digestion. In Rhodamine B method, 0.3 µg of Ga can be detected, however, HNO3 gives interference on the determination. PAN and Oxine methods have less sensitivity but better reproducibility than Rhodamine B method. Atomic Absorption Spectrometry (AAS): Results are obtained in several seconds. In the flame-AAS, 1 ml of 4 ppm of Ga should be supplied in the state of soluble. In flameless-AAS, all state (either liquid or solid) of sample can be supplied for analysis and 0.2 ng of Ga is detectable by electron probe microanalyzer (EPMA): In this system, three factors: what elements, how much, and where in the cell, are analyzed at the same time. 69pg of Ga can be detected with 5% deviation. By this method, it is possible to clarify the localization and distribution of Ga in the cell.

94 MECHANISM OF GA-67 INCORPORATION TO CULTURED CELLS. K. Nakamura & H. Orii. Tokyo Metropolitan Institute of Medical Science.

The mechanism of tumor uptake of Ga-67 has been studied on cell culture systems. The uptake in cells is influenced by such factors as pH, culture medium composition and culture vessel materials. Our results obtained indicated the presence of a fundamental mechanism which dictates Ga-cell incorporation.

Materials & methods; LS178Y cells were cultured in fischer's medium supplemented with 10 % calf serum. Incorporation was studied while the cells are in stationary phase. GA-67 strongly attached to the glass surface under pH dependence, and showed the similar pattern to that of cell incorporation. In this study, we excluded chelating agents such as edta and citrate. pH dependent changes of cell incorporation and glass absorption were reversible.

These results indicate that Ga attaches to the cell surface before it is incorporated in the cell. So far, it supports the Glickson's hypothesis that Ga makes poly-...