Panel Discussion

Institution and Management of RI In Vitro Tests

Introduction

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RI in vitro test are composed of radioimmunoassay (RIA), competitive protein binding analysis (CPBA), radioreceptor assay (RRA) and others. RIA was developed by late Dr. Berson and Dr. Yalow of U.S.A. in 1959, and this was a remarkable work. Sorry to state, Dr. Berson has died in 1972, but as the result of the development of RIA, Dr. Yalow had a honor to get Nobel Prize in 1977. Both have visited Japan several times.

RI in vitro test in Japan has developed since about 1963. Commercially it started from RT_3U in 1963, and insulin in 1965. At the present time, 13 protein and peptide hormones, and 12 other homones, and 16 other substances including drug, virus, proteins related to cancer, serum protein and others are available as the commerical kits. The peak of their appearance was 1972 and 1973. In this panel discussion it was shown that the number of assayed test tubes of both hormones and other substances increased, and also radioisotopes employed increased every year. Among them, ^{125}I was used in the largest amount, next ^{131}I, ^{3}H, ^{59}Fe, ^{57}Co and ^{75}Se as the numbers of test tubes. As the activity expressed as mCi, ^{125}I was used in the largest amount, next ^{131}I, ^{59}Fe, ^{3}H, ^{75}Se and ^{57}Co. The mCi activity of ^{125}I used per year was, however, relatively small (325 mCi per year).

RI in vitro tests have been used already in the diagnosis of various disorders and conditions, and we have Radioimmunoassay Research Society in Japan which has the scientific meeting every year. Moreover, we have recently developed a mass-screening method by measuring TSH (Thyroid Stimulating Hormone), and performing its screening since two years ago. This adds an additional usefulness of RIA. It is also important to know the significance and importance of the measurement. It is hoped that a fruitful discussions can be made in this panel discussion including the matters stated here.

The National Regulations for Safe Handling of Radioisotopes from Standpoint of In Vitro Tests

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Recent development of Nuclear Medicine has made it possible to widely use of RI in vitro tests for clinical diagnosis and clinical research. Radioisotope for in vitro tests was commonly used with I-125 and total radioactivity of a kit contained 1 or 2 μCi or less. It is very important to have adequate national regulations for safe handling of radioisotopes in use of in vitro tests. However, the regulations for safe handling of radioisotopes was very difficult to understand for complex structure from standpoint of users. It is necessary that the regulations for safe handling of radioisotopes revised to simple structure, enriched the contents and applied to every cases. Furthermore, standardized training should be given to all members of radiation works and officers of safe handling of radioisotopes.