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STUDIES ON IMMUNOLOGICAL CHARACTERISTIC OF TPA (TISSUE POLYPEPTIDE ANTIGEN).

M.Hamazu,T.Yamazaki,S.Hosoda,Y.Ura,Y.Ochi, T.Miyazaki and M.Ishida. Shiga Univ.of Med. Sci.,Shiga and Kyoto prefect.Univ.of Med., Kyoto.

Positive immuno-reaction of TPA with antibody for keratin (polyclonal and monoclonal) was found. However, there was no cross-reaction between keratin and anti-TPA. TPA also showed the immuno-reactivity with blood group antigens (A, B and Lewis substances), although no reactivity of keratin with these blood group antigens was found. These data suggest that TPA has an immunological similatiry with both keratin and blood group antigen. When ^{125}I-TPA and ^{125}I-keratin were gel-filtrated using Sephadex G-200 column, the radioactivity of TPA and keratin was found in the void volume (MW > 200,000) and the MW of approximately 60,000, respectively. Distribution of TPA and keratin in the fraction on Sephadex G-200 of the serum of cancer patients were examined by each RIA method. TPA and keratin activity were found in the void volume fraction and the MW of 60,000, respectively. This experiment suggests that TPA may be glycoprotein with keratin-like immune determinant. When TPA and keratin in cancer patient's sera were determined by each RIA, no correlations between TPA and keratin were found. Both proteins showed often pseudopositive in benign diseases. TPA is rather a good marker for the monitoring of malignant diseases.

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FUNDAMENTAL AND CLINICAL EVALUATION OF CEA RIA KIT USING MONOCLONAL ANTI-CEA ANTIBODY.

Y.Ura,Y.Ochi,M.Hamazu,T.Hachiya,T.Miyazaki and M.Ishida.Shiga. Univ. of Medical Science, Otsu, Shiga, Kyoto prefect. Univ. of Medicine, Kyoto.

We performed the CEA Travenol immuno-radiometric assay kit using monclocal anti-CEA antibody. On the fundamental studies, reproducibility of standard curve, intra-assay precision and inter-assay precision were almost satisfactory. An appropriate standard curve was obtained in the range of 1.0ng/ml and 400ng/ml. The cross-reaction between CEA and NCA, BGP was 0.0075 % and 0.0005 %, respectively. By this kit, the mean value of plasma CEA levels of 100 non-smokers and 100 heavy smokers (normal liver function) was 1.67 ± 0.92ng/ml and 3.92 ± 2.75ng/ml, respectively. By the Roche's kit, the mean value was 2.07 ± 0.92ng/ml and 2.48 ± 1.20ng/ml, respectively. Correlation of mesured value obtained by this kit and Roche's kit was r=0.67. In 160 cases of benign diseases and in 200 cases of malignancies, we determined 5ng/ml as cut-off value. Ratio of elevated CEA level was 53 % by this kit and 60 % by Roche's kit in 30 gastric carcinoma cases, 30 % by this kit and 20 % by the Roche's kit in 30 mammary carcinoma cases. This kit can be envisioned to be suitable for clinical routine examination, because test samples can be assayed directly and mesured results can be obtained half day.

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FUNDAMENTAL AND CLINICAL STUDIES FOR THE MEASUREMENT OF CELLULAR RETINOL BINDING PROTEIN (CRBP, VITAMIN-A RECEPTOR).

K.Ando*,T.Ishigami*,S.Sato*,N.Kuwano**, T.Yanagita*** and S.Komiyama***. *Kitasato Biochem. Labs.,Bristol-Myers, K.K., Kanagawa,**Oita Med. College,Oita and ***Kyushu Univ.,Fukuoka.

The existence of certain relationship have been expected between Vitamin-A receptor (Cellular retinol binding protein,CRBP) content in cancer tissue and efficacy of combination chemotherapy of vitamin-A and anti-cancer drugs. In order to reveal this problem, we developed a detection and quantitation procedure for CRBP by radio-receptor assay (RRA) utilizing the Scatchard-plot analysis. The result obtained by this RRA method was highly coincided with that by Sucrose-density gradient analysis, a reliable analysing method for CRBP. In the case of laryngeal carcinoma tissue, CRBP content was higher in the cancer tissue than in the adjacent normal tissue. And in the surface region of cancer, CRBP content was found to be higer than in the core tissues. It was suspected that in the cancers effective to the vitamin-A assisted chemotherapy, more quantity of CRBP seems to be contained than in the chemotherapy-resisted tumors.

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INDIUM-111 LABELED MONOCLONAL ANTIBODIES: THE EFFECT OF DTPA CONJUGATION ON THE ANTIBODY ACTIVITY AND IN VIVO TUMOR LOCALIZATION.

H.Sakahara, K.Endo, T.Nakashima, H.Ohta, K.Torizuka, K.Okada, O.Yoshida, Y.Ohmomo, T.Furukawa, and A.Yokoyama. Kyoto University, Kyoto. S.Nishi. Hokkaido University, Sapporo.

Monoclonal antibodies (Ab) to human α-fetoprotein (AFP) were conjugated with diethylenetriaminepentaacetic acid (DTPA) using cyclic DTPA anhydride and the effect of DTPA conjugation on the Ab activity was evaluated by radioimmunoassay and Scatchard analysis. DTPA conjugated Ab were then labeled with In-111 and used for the radioimmunoimaging studies.

In Ab heavily conjugated with DTPA, Scathard analysis demonstrated that the maximum binding capacity rather than the affinity constant was affected. Under suitable conditions, In-111 labeled Ab were prepared with almost full retention of Ab activity. Scintigrams of nude mice bearing AFP-producing human testicular tumor clearly delineated the site of the tumor with higher accumulation than with I-131 labeled Ab. However, the number of DTPA molecules attached per Ab molecule markedly influenced the in vivo biodistribution as well as the in vitro Ab activity.

In conclusion, In-111 labeled Ab, when properly prepared, would be more ideal radiopharmaceuticals for the radioimmuno-imaging of cancer than I-131 labeled Ab.