33 RADIOTRACER DISTRIBUTION STUDIES OF SERUM GLUCAGON: EVALUATION OF A NEW COMMERCIAL KIT SUPPLIED BY DAINABOT LABORATORY. T. KATSUYAMA, M. ISHIHARA, A. ISHITOMI, T. HARA, M. YAMANARI and K. UYAMA. Tottori University School of Medicine and Tottori Red Cross Hospital, Yonago and Tottori.

A sensitive and precise radioimmunoassay for glucagon using anti-pancreatic glucagon antiserum has been developed by Dainabot Laboratories. This assay was highly specific. Detection limit was approximately 50 pg/ml and standard curve up to 1,600 pg/ml. The mean coefficient of intra-assay variation was 6.0±1.6% and that of inter-assay variation was 7.7±1.7%. The mean recovery ratio was 110±27%. The fasting concentrations of glucagon (IRG) were as follows: 62±35 pg/ml in normal subjects (n=86), 104±43 pg/ml in diabetes mellitus who need no drug therapy (10), 273±102 in liver cirrhosis (14), 526±377 in obstructive jaundice (3), 349±226 in insulinoma (2), 130±34 in hypoglycemic pituitary dwarfism (7), 249±55 in hyperglucagonemia (8), 333±182 in primary hypothyroidism (3), 111±58 in chronic pancreatitis (9), 84±27 in acromegaly (10) and 58±5 in patients with pancreatic cancer. After glucose load, hyperglucagonemic patients usually showed no decrease or paradoxical increase of IRG. These results suggest the possibility that serum glucagon plays some role in patients who show glucose intolerance. Further study on IRG will clarify not only these details but also clinical significance of measuring IRG.


Two different kinds of ACTH kits are commercially available in Japan. One kit from CIS utilizes a direct assay method without extraction of a specimen, and the other kit from RCC utilizes an extraction method.

The advantage of the CIS kit method is that it is simpler and requires less blood plasma than the RCC kit method. However, there are some cases in which falsely elevated ACTH values result. For this reason, it is possible to consider the following three points: (1) presence of non-specific "binder" in plasma, (2) effects of Big-ACTH and various fragments, and (3) non-specific interference by heparin, anticoagulant.

Clinical evaluation of ACTH determinations in plasma has mainly two aspects, a pituitary function test and a tumor marker. For a routine test of pituitary function, the simpler CIS kit seems to be useful sufficiently, because the incidence of the abnormally high results is small. But once the false elevation of ACTH level is suspected, careful reexamination by the RCC kit, which is not interfered by Big-ACTH and endogenous ACTH antibody, should be recommended. On the other hand, based on the fact that most of the ectopic ACTH producing tumor does not produce Big-ACTH, the CIS kit is thought to be suitable for assay of ACTH as a tumor marker.


β-EP, a fragment of β-lipotropin (β-LPH), is a peptide with strong opioid activity, and its physiological and pathophysiological roles are investigated in several fields of medical science. In this paper, we have examined the specificity of β-EP RIA kit provided by New England Nuclear Corp., and examined plasma levels of β-EP in normal subjects and patients with ectopic ACTH-producing tumor.

The detectability was 3 pg/tube, and 30 pg/ml of plasma was possible to assay. When the crossreactivity of ACTH and β-LPH related peptides such as ACTH, α-melanocyte stimulating hormone (α-MSH), corticotropin-like intermediate lobe peptide, β-LPH, γ-LPH, α-MSH, γ-EP, β-EP fragment (17-30), α-EP and methionine-enkephalin were examined, β-LPH and β-EP fragment (17-30) were reacted equal to β-EP on a molar basis indicating that the RIA system recognized the carboxyl portion of β-EP molecule.

In 15 normal subjects, plasma β-EP levels were from 30 to 45 pg/ml. On the other hand, two patients with ectopic ACTH-producing tumor had elevated plasma β-EP levels (280, 520 pg/ml). Further characterization will be needed to know the actual concentration of β-EP in these plasma samples, because β-EP could not differentiate from β-LPH in this RIA system.