the time when the patient could not continue the exercise or finished at 75W for 9 minutes. Heart rate (HR) and systolic blood pressure (SBP) were examined every 1 minute and cardiac output was measured every 3 minutes by the dye dilution method. **Result:** The mean serum digoxin level was 0.68 ± 0.27 mg/ml (range: 0.27 to 1.12). HR was decreased and stroke index (SI) was increased at rest significantly by the digitalis administration. However, at exercise, SI had a tendency to be decreased in a high HR group and was significantly increased in a low HR group. SBP was not affected by the digitalis. By the digitalis administration, the increasing rate of HR at the exercise was increased significantly, however, that of SI had a tendency to be decreased. **Conclusion:** The administration of digitalis influenced to decrease of HR at rest, but there was no effect to control the HR at exercise. SI was increased by the digitalis administration at rest. However, at exercise, SI was decreased in a high HR group and increased in a low HR group.

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PROLONGED IMPROVEMENT OF HEMODYNAMICS AFTER A SINGLE ADMINISTRATION OF ORAL DOBUTAMINE

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It was believed that dobutamine (DOB) is not effective when taken orally. But last year we reported that oral DOB provided beneficial hemodynamic effects in patients with heart failure (HF). At that time we noticed a strange thing; the time-concentration curve did not fit the course of the hemodynamic changes. We call this discord "The prolonged improvement of hemodynamics". The purpose of this investigation is to evaluate whether the discord is real or not. **METHODS & RESULTS:** Study (1) We administered DOB to 13 patients with HF. Oral DOB increased cardiac index (CI) from 2.19 to 2.78 (after 1 hr) and to 2.82 (after 2 hrs). After 3 hrs CI increased to 2.46 L/min/m^2 . On the other hand DOB concentrations at 0.5, 1, 2 and 3 hours after oral administration were 100, 81, 26, 16 ng/ml. After 2 hrs orally administered DOB concentration had decreased below the effective level, but hemodynamic changes still continued after 2 hrs. Study (2) Using the Single-blind study, we administered oral DOB and a placebo to 8 patients with HF and to 4 control subjects who had no HF. In patients "The prolonged improvement of hemodynamics" was found, but in control patients this phenomenon was not detected. Study (3) DOB was administered by intravenous drip and CI was increased 27%, 15 minutes after infusion was stopped CI was increased only 9%. After 30 minutes CI returned to its previous level. **CONCLUSION:** We believe that "The prolonged improvement of hemodynamics" truly exists when oral DOB is administered to HF patients. We think this phenomenon may be concerned with absorption of gastrointestinal and dysfunction of left ventricle. Thus this phenomenon is useful

for oral administration as there are few side-effects of β -stimulants, though DOB concentration decrease rapidly.

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LV FUNCTION EVALUATION WITH NUCLEAR CARDIAC PROBE IN CCU

-THE EFFECT OF BUCLADESINE SODIUM ON HEMODYNAMICS OF CHF-

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We evaluated Left ventricular function of congestive heart failure (CHF) under treatment of bucladesine sodium (BS) with nuclear cardiac probe in Coronary Care Unit (CCU) which is specially defended for radioisotope. Nuclear cardiac probe with Tc-99m was designed for equilibrium gated volume curve. Ejection fraction (EF), $1/3$ EF and dv/dt were calculated from LV volume curve.

11 patients with CHF were examined before and during BS using Nuclear Probe and left ventricular ejection fraction (LVEF), relative cardiac output and max dv/dt were evaluated.

4 patients without cardiac disease were also measured by nuclear probe as control group. As results, LVEF, RCO and max dv/dt of CHF group were increased during treatment BS with decreasing blood pressure and pulmonary capillary wedge pressure.

The conclusion is that bucladesine sodium is useful vasodilator drug for treatment of congestive heart failure and the non-imaging nuclear cardiac probe is helpful in assessing global ventricular function in Coronary Care Unit.

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CARDIORENAL EFFECTS OF AN ORALLY ACTIVE DOPAMINE PRODRUG TA-8704 IN PATIENTS WITH SEVERE CHRONIC CONGESTIVE HEART FAILURE

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TA-8704, a newly synthesized drug, is metabolized in vivo to dopamine after oral administration. We studied its cardiorenal effects in 10 patients with severe chronic congestive heart failure.

Ten patients, ages ranged from 26 to 63 years, were selected. Following 60 minutes of control period, a single 1200mg dose of TA-8704 was given orally and renal function and electrolyte excretion were determined for 3 hours. Cardiac function was evaluated by means of echocardiography.

Plasma free dopamine reached the peak level within 3 hours. Blood pressure and heart rate remained unchanged. Left ventricular end-diastolic volume was unchanged while end-systolic volume decreased ($p < 0.01$). Mean velocity of circumferential fiber shortening ($p < 0.01$) and fractional shortening ($p < 0.05$) improved. Renal plasma flow, glomerular filtration rate ($p < 0.05$), urine volume