Thyroid hormone metabolism is frequently abnormal in patients with advanced congestive heart failure (CHF), with low triiodothyronine (T3) levels associated with poor hemodynamics and increased mortality. Studies have shown that intravenous (i.v.) T3 improves hemodynamics acutely in patients immediately post-bypass surgery. To assess the safety of i.v. T3 (which may have unique inotropic mechanisms) in CHF, 22 patients with class III or IV CHF were given an i.v. T3 bolus ±6 hour infusion (total dose range 0.05 – 1.7 μg/kg) under hemodynamic and ECG monitoring. Basal metabolic rate (BMR) by indirect calorimetry and LVEF by echo were measured at baseline and 2-4 hours post dosing.

**Results:** No patient had angina or sustained supraventricular or ventricular ectopy and mean heart rate (HR) did not change significantly (94 ± 16 to 93 ± 13 bpm, p = NS), with only 3/22 patients having an increase in HR >10 bpm. There was no significant change in mean BMR (2221 ± 899 to 2440 ± 689 Kcal/day, p = NS) and only minimal change in mean core temperature (36.8 ± 0.4 to 37.3 ± 0.6°C, p = 0.007), reflecting a peak temperature 38.0-38.5°C in 4 patients. Cardiac output increased by >1.0 L/mm in 11/22 patients (>50% increase over baseline in 8/22 patients) with no significant change in LVEF (22.7 ± 23.7 ± 4%, p = NS) or filling pressures.

**Conclusion:** Acute intravenous T3 administration is well tolerated in patients with advanced CHF and has potential hemodynamic benefit warranting further investigation.