The present study was intended to characterize the effect of high and low dietary calcium feeding on the development of hypertension in spontaneously hypertensive rats (SHR).

Five week old SHR were fed with diet modified in its calcium content. Systolic blood pressure (SBP) and heart rate (HR) were measured using a tail cuff device. Control SHR was fed with 0.6% calcium diet. The effect of dietary calcium feeding on the time course of hypertension depends on the level of calcium in the diet. High 2.5% calcium diet delayed and attenuated SBP increase for 44 weeks and low 0.06% calcium diet accelerated and enhanced SBP increase for 10 weeks. Also, the HR of SHR was affected with the different calcium diets. HR was increased in high calcium diet and reduced in low calcium diet. These data are consistent with previous work on high calcium diet (Ayachi: Metabolism 28: 1234, 1979; McCarron et al.: Hypertension 3(S-I):162, 1981) and show that dietary calcium modulates development of hypertension in SHR. Our hypothesis is that calcium intake altered parathyroid function and calcium exchanges in vascular and non vascular tissue (Gairard et al.: Arterial Wall 6:199, 1980) which are an important determinant for the development of genetic and DOCA+Saline (Berthelot et al.: CR Soc Biol 171: 1101, 1977) hypertension.