Evidence suggesting that the angiotensin II-sensitive intracellular Ca2+ pool is reloaded from the external space in adrenal glomerulosa cells

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Adrenal glomerulosa cells prelabeled with 45Ca2+ and perifused for 10 min with 10 nM angiotensin II (AII) in a dynamic perifusion system show a biphasic response with an initial transient increase in 45Ca2+ efflux, followed by a sustained phase of increased 45Ca2+ efflux. When labeled adrenal golmerulosa cells were treated with 10 nM AII for three consecutive periods of 5 min, the transient increase in 45Ca2+ efflux was observed only in the first period. However, when 40Ca2+ was measured in the perifusate using a Ca2+-sensitive electrode coupled to the perifusion system, a transient increase in 40Ca2+ efflux was observed in each period of AII treatment. Exposing the cells to AII for 1 min, the amount of 40Ca2+ effluxed out of the cells was 58.3 ± 8.4 nmol/108 cells. In contrast, when the cells were exposed to an increase in the external potassium (K+) concentration of 4 to 12 mM during 1 min of perifusion, the amount of 40Ca2+ effluxed was 16 ± 5 nmol/108 cells. These results indicate