

# Rapid kinetic studies of SH oxidation-induced calcium release from sarcoplasmic reticulum vesicles

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We studied the kinetics of calcium release induced by SH oxidation in triads isolated from frog and rabbit skeletal muscle by measuring calcium fluxes by a fast filtration method. In both species SH oxidation induced release of 70-80% of the passively loaded calcium with a rate constant of  $1 \text{ s}^{-1}$ . This rate constant is 3 times higher than the rate constant of calcium-induced calcium release and 15 times lower than the rate constant of ATP-induced release. Calcium release induced by SH oxidation exhibited the same calcium dependence of calcium-induced calcium release and was also inhibited by physiological  $[\text{Mg}^{2+}]$ . Neither SH oxidation-induced calcium release nor calcium-induced calcium release were regulated by luminal calcium. The redox state of thiol groups does not seem to control ATP-induced calcium release since the rate constant of calcium release after SH oxidation was not different from the rate constant measured in the presence of the reducing agent dithiothreitol. Our results