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Se Regulates the Contractile Ability of Uterine Smooth Musclevia Selenoprotein N, Selenoprotein T, and Selenoprotein Win Mice.

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Abstract

Selenium (Se) is an essential micronutrient that maintains normal physiological functions in humans and animals. Se plays a vital role in regulating smooth muscle contractions, and selenoprotein N (SelN), selenoprotein T (SelT), and selenoprotein W (SelW) are closely related to the release of Ca^{2+} . The present study analyzed the effects and mechanisms of SelN, SelT, and SelW in uterine smooth muscle contractions in a mouse model fed Se. The mRNA and protein levels in the uterine smooth muscle of mice were detected by qPCR, Western blot, and immunohistochemical analysis. The results showed that Se played an indispensable role in uterine smooth muscle contractions. Increased Se concentration in food increased the release of Ca^{2+} to a certain extent, causing CaM expression, MLCK expression, and MLC phosphorylation, which can lead to uterine smooth muscle contractions. In contrast, Se deficiency reduced the release of Ca^{2+} to a certain degree, thereby reducing the contractile ability of uterine smooth muscle. In this study, genes related to SelN, SelT, and SelW expression in uterine smooth muscle cells were investigated. The results showed that the Se concentration had an effect on the expression of SelN, SelT, and SelW in uterine smooth muscle cells. Se influences the release of Ca^{2+} through SelN, SelT, and SelW, which changes the expression of MLCK and then affects uterine smooth muscle contractions. The three selenoproteins SelN, SelT, and SelW play a very important role in uterine smooth muscle contractions, and the absence of any of these proteins affects the contractility of the uterus.

KEYWORDS: Ca²⁺; Contraction; Selenium; Selenoprotein; Uterine smooth musclePMID: 30756291 DOI: [10.1007/s12011-019-1647-4](https://doi.org/10.1007/s12011-019-1647-4)

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