Genistein Induces Increase in Fluid pH, Na⁺ and HCO₃⁻ Concentration, SLC26A6 and SLC4A4 (NBCe1)-B Expression in the Uteri of Ovariectomized Rats

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Abstract: Genistein has been reported to stimulate luminal HCO₃⁻ secretion. We hypothesized that genistein mediates this effect via SLC26A6 and SLC4A4 (NBCe1) transporters. Our study aimed to: investigate changes in uterine fluid pH, Na⁺ and HCO₃⁻ concentration and expression of uterine SLC26A6 and NBCe1 under genistein effect. Ovariectomized adult female rats received 25, 50 and 100 mg/kg/day genistein for a week with and without ICI 182780. A day after the last injection, in vivo uterine perfusion was performed to collect uterine fluid for Na⁺, HCO₃⁻ and pH determination. The animals were then sacrificed and uteri were removed for mRNA and protein expression analyses. SLC26A6 and NBCe1-A and NBCe1-B distribution were visualized by immunohistochemistry (IHC). Genistein at 50 and 100 mg/kg/day stimulates uterine fluid pH, Na⁺ and HCO₃⁻ concentration increase. Genistein at 100 mg/kg/day up-regulates the expression of SLC26A6 and SLC4A4 mRNA, which were reduced following concomitant ICI 182780 administration. In parallel, SLC26A6 and NBCe1-B protein expression were also increased.