

Whitepaper

MateRegen® Gel expands about 50% of its volume in 30 minutes

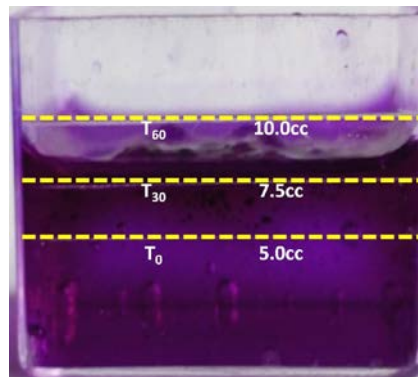


Figure 1

As shown in Figure 1, MateRegen® Gel was injected into a glass container. The initial volume (V_0) of the gel was 5ml (T_0). One drop of surgical blue was added into 5 milliliters of cell culture medium (DMEM) that was then added on top of the MateRegen gel. Since MateRegen gel is clear and transparent, blue solution will stain the gel and serve as an indicator to clearly observe changes in volume of the gel. The gel together with the DEME solution was stored at 37°C. After 30 minutes (T_{30}), the solution was discarded and the volume of gel (V_{30}) was measured. The expansion rate of the gel was calculated by $(V_{30}-V_0) / (V_0) \times 100\%$. Fresh DMEM was added after the measurement; the gel volume measurement (V_{60}) was repeated at 60 minutes (T_{60}); and the expansion rate was calculated again.

The DMEM solution quickly and evenly mixed with gel. During the first 30 minutes, the expansion rate was about $(7.5 - 5) / 5 \times 100\% = 50\%$. During the next 30 minutes, the expansion rate was minimal.

The quickest and major gel expansion happened during the first 30 minutes of hydration. This expansion could have been caused through absorption of water by the hydrophilic functional groups, such as $-\text{OH}$, $-\text{COOH}$, on the hyaluronic acid molecules and occupation by water in the spaces between hyaluronic acid monomers. This *in vitro* study may not completely reflect the performance of MateRegen® Gel instilled in the uterine cavity though, the gel surrounded by effusion and blood in the uterine cavity could create a aqueous environment similar to the *in vitro* test setting, which will result in expansion of MateRegen® Gel in the uterine cavity, similar as the *in vitro* setting.

Although it is hard to measure the pressure generated by such expansion in volume, the expanded gel will most likely exert pressure onto the endometrium surface, stop minor bleeding, and keep the mucous surface separated, which could create a microenvironment to facilitate mucous regeneration and prevent adhesion after intra-uterine procedures.