Gellan gum (E418, CAS 71010-52-1) is a polysaccharide from brown algae (Sphingomonas [formerly Pseudomonas] elodea) with β1→4 type tetrasaccharide repeats cross-linked by α1→3 glycosidic bonds. Due to these non-α1→4 type linkages, E418 is suitable for gel preparations which bear low aspiration risks for special patient groups, notably dysphagia patients.

**Objectives**

- To quantify the rheological and texture modification of E418 as a function of concentration, pH, conductivity, and temperature.
- To elucidate the complex material behaviour of E418 semisolids in view of their application for the dysphagia patients.

**Results**

- E418 remains tasteless below 2% (m/m) concentration. Excessive heat, extreme pH and low ionic strength have a negative impact on gelification.
- Tap water is suitable for E418 preparations.
- Temperature of no more than 70°C is a compromise between hydration (solubilisation) and degradation of E418. pH<3 is incompatible with E418.
- Using tap water of 0.512 mS/cm and 18 °H, gel viscosity increases linearly with raising E418 concentration from 220 mPa*s at 0.1% (m/m) to 6044 mPa*s at 2% (m/m) with least square line y = 2905 x - 289 (r = 0.98). (Fig.1)
- Hard tap water of 0.519 mS/cm and 27 °H yields a calibration line of y = 11129 x - 206 (r = 0.995). (Fig.1)
- Its texture increases polynomially from 149 g at 0.5% to 430 g at 1.5 % with y = 89 x 2 + 124 x (r = 0.93) respectively. (Fig.2)

**Material and methods**

Aqueous semisolids of E418 (Gellan® Sigma Aldrich G1910) were prepared at concentrations between 0.1 - 2.0% (m/m) and at temperatures between 50 - 90°C. Viscosities were measured at the yield point using a Brookfield R/S+® Rheometer equipped with a Vane spindle 30/15. Textures were measured on a Brookfield CT3 TexturePro® Analyzer using the TA15/1000 30 mm D, 45 cone at a penetration depth of 20 mm.

**Conclusion**

E418 semisolids need a standardized preparation method to bring viscosity in a predefined range. A correlation line specific for the tap water source helps to find an individually-optimized E418 concentration for special patients such as those suffering from swallowing diseases.