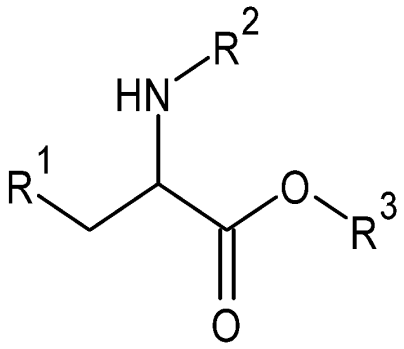



**Figure 1: Structure of Performance-Enhancing Excipients of the Present Invention**

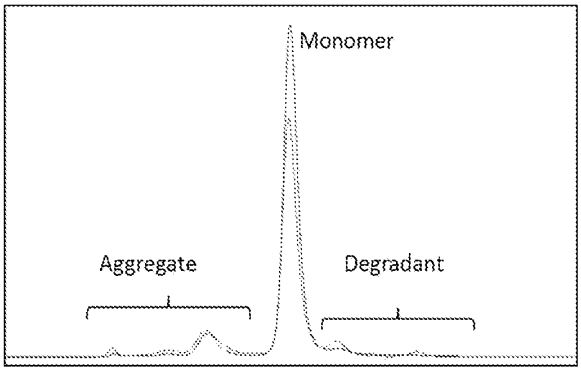



**Figure 2: Typical size exclusion chromatogram (SEC-HPLC) for a mAbs. The monomer, aggregate and degradant peaks are identified in the Figures**

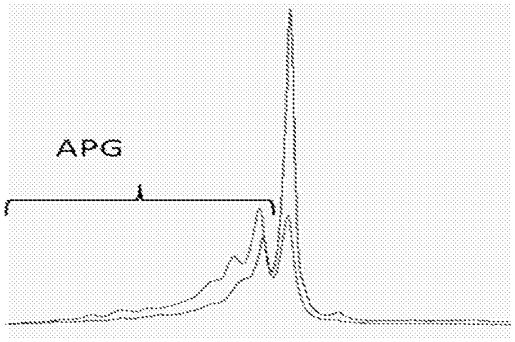



**Figure 3: Typical ion exchange chromatogram (IEC-HPLC) for a mAb. The acidic peak group (APG) is identified in the Figure.**

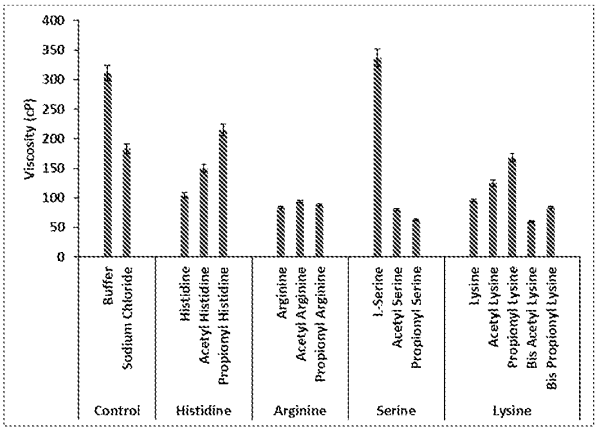



**Figure 4: Viscosity of formulations in Table 2 at the mAb concentration of 300 mg/ml. Excipient concentration of each formulation was 300 mM except buffer control (no excipient). Viscosity was measured at 25°C.**

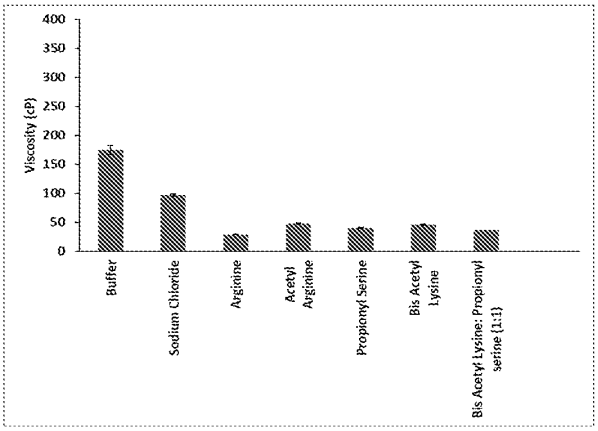



**Figure 5: Viscosity of formulations in Table 3 at the mAb concentration of 250 mg/ml. Excipient concentration of each formulation was 300 mM except buffer control (no excipient). Viscosity was measured at 25°C.**

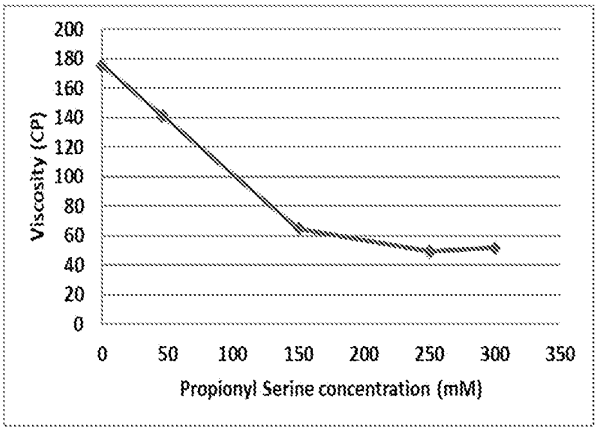



**Figure 6: Viscosity of mAb at 250 mg/ml concentration as a function of propionyl serine concentration in a 10 mM phosphate pH 8.0 buffer. Viscosity was measured at 25°C.**

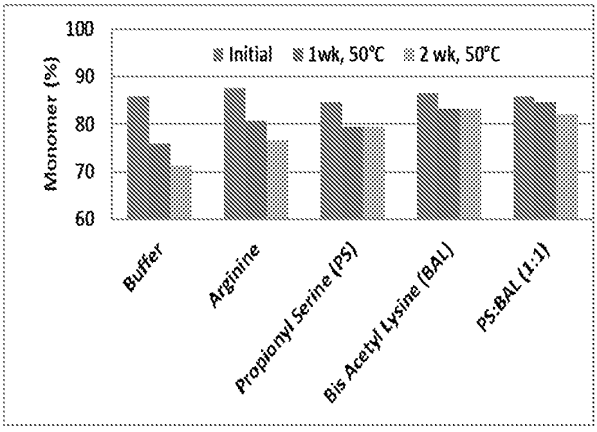



**Figure 7: Percent monomer of mAb formulations in Table 4 at initial and following 1 and 2 weeks of storage at 50°C. Percent monomer was determined using SEC-HPLC.**

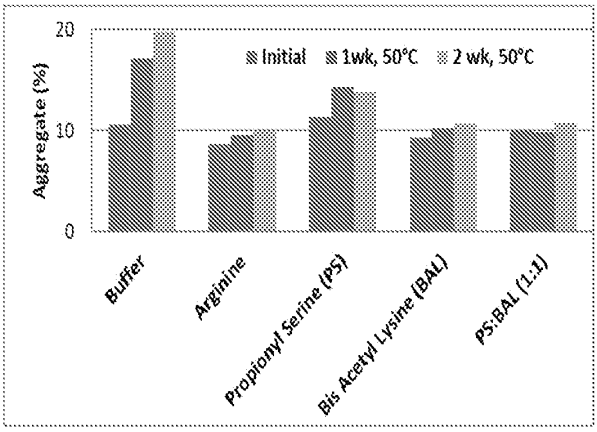



**Figure 8: Percent aggregate of mAb formulations in Table 4 at initial and following 1 and 2 weeks of storage at 50°C. Percent monomer was determined using SEC-HPLC.**

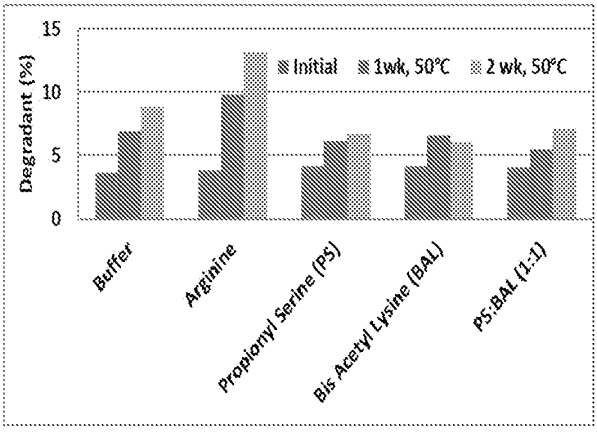



**Figure 9: Percent degradant of mAb formulations in Table 4 at initial and following 1 and 2 weeks of storage at 50°C. Percent monomer was determined using SEC-HPLC.**

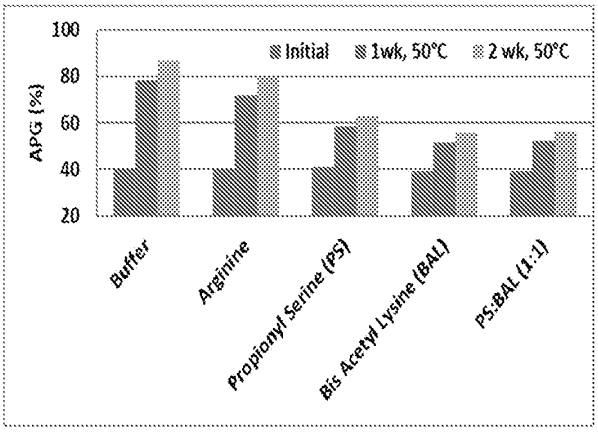



**Figure 10: Percent acidic peak group (APG) in mAb formulations in Table 4 at initial and following 1 and 2 weeks of storage at 50°C. Percent APG was determined using IEC-HPLC.**

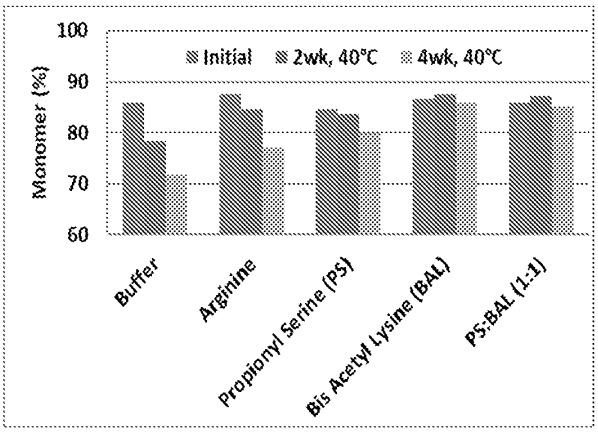



**Figure 11: Percent monomer of mAb formulations in Table 4 at initial and following 2 and 4 weeks of storage at 40°C. Percent monomer was determined using SEC-HPLC.**

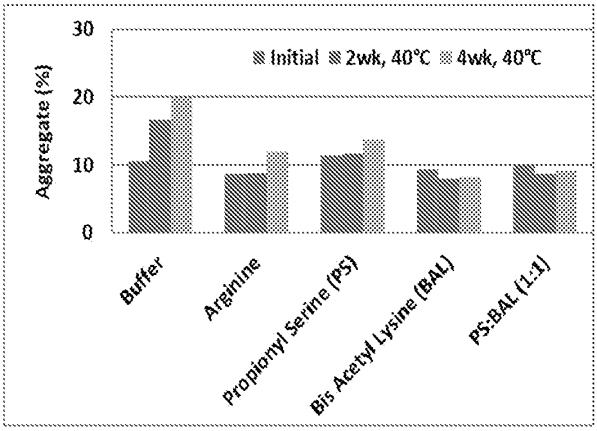



**Figure 12: Percent aggregate of mAb formulations in Table 4 at initial and following 2 and 4 weeks of storage at 40°C. Percent monomer was determined using SEC-HPLC.**

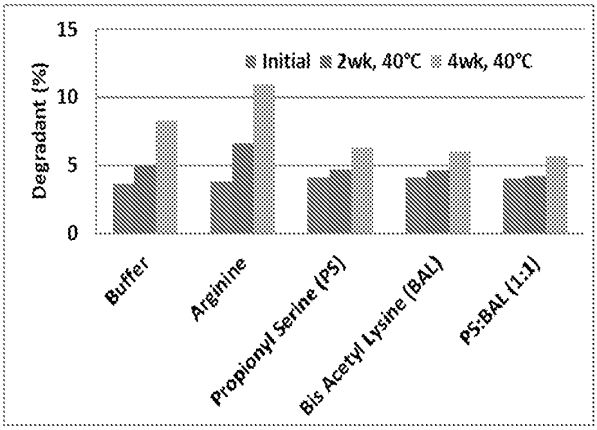



**Figure 13: Percent degradant in mAb formulations in Table 4 at initial and following 2 and 4 weeks of storage at 40°C. Percent monomer was determined using SEC-HPLC.**

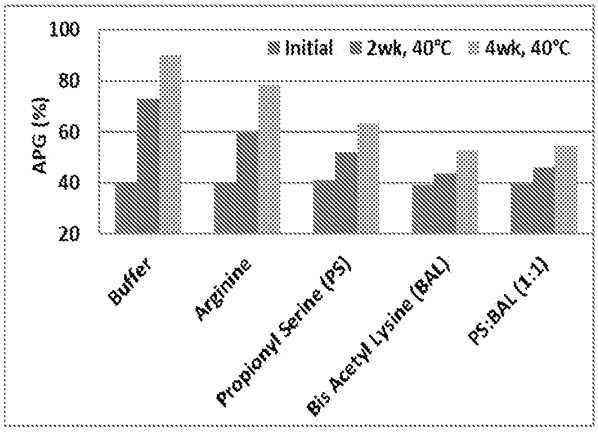



**Figure 14: Percent acidic peak group (APG) in mAb formulations in Table 4 at initial and following 2 and 4 weeks of storage at 40°C. Percent APG was determined using IEC-HPLC.**

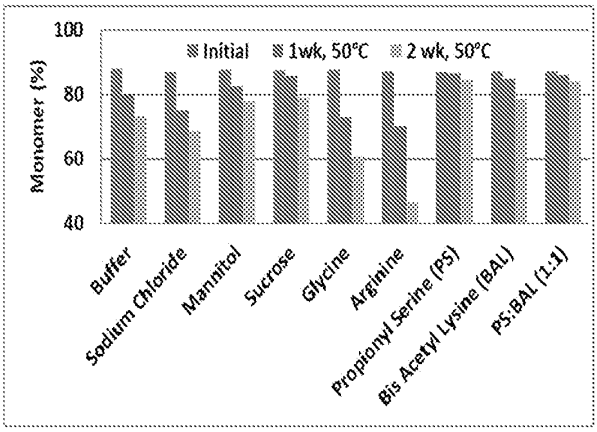



**Figure 15: Percent monomer of mAb formulations in Table 5 at initial and following 1 and 2 weeks of storage at 50°C. Percent monomer was determined using SEC-HPLC.**

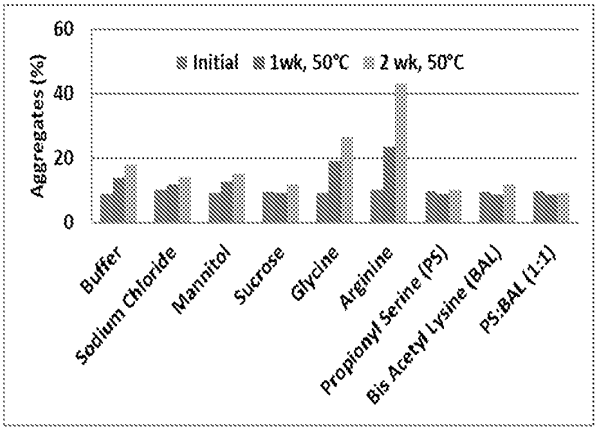



**Figure 16: Percent aggregate in mAb formulations in Table 5 at initial and following 1 and 2 weeks of storage at 50°C. Percent aggregate was determined using SEC-HPLC.**

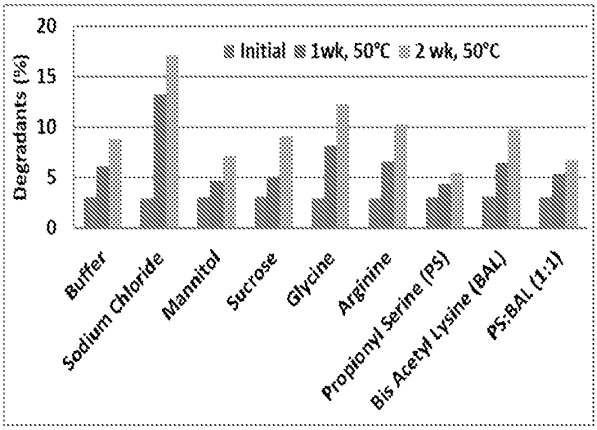



**Figure 17: Percent degradant in mAb formulations in Table 5 at initial and following 1 and 2 weeks of storage at 50°C. Percent degradant was determined using SEC-HPLC.**

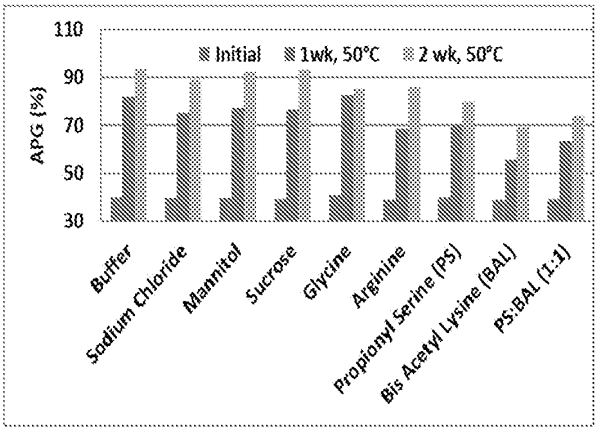



**Figure 18: Percent acidic peak group (APG) in mAb formulations in Table 5 at initial and following 1 and 2 weeks of storage at 50°C. Percent APG was determined using IEC-HPLC.**

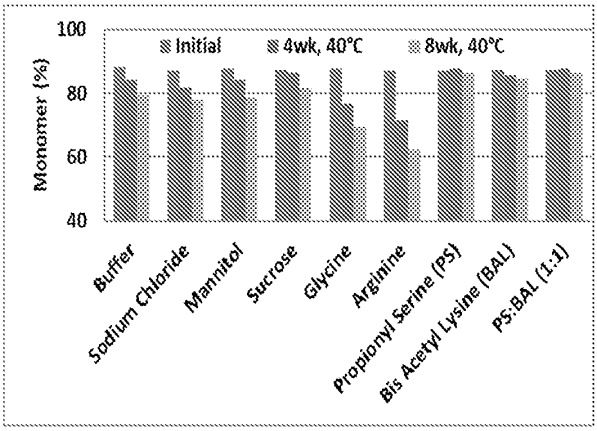



**Figure 19: Percent monomer of mAb formulations in Table 5 at initial and following 4 and 8 weeks of storage at 40°C. Percent monomer was determined using SEC-HPLC.**

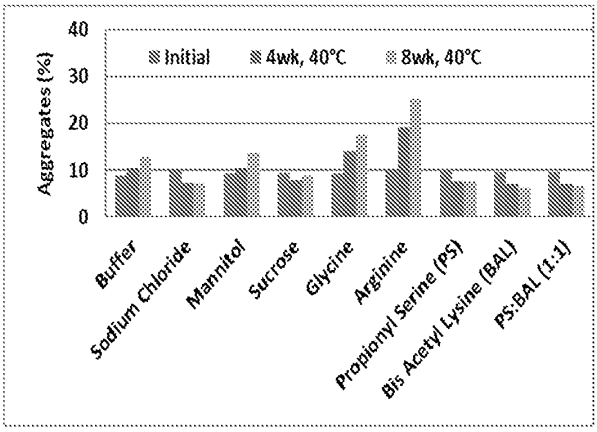



**Figure 20: Percent aggregate of mAb formulations in Table 5 at initial and following 4 and 8 weeks of storage at 40°C. Percent aggregate was determined using SEC-HPLC.**

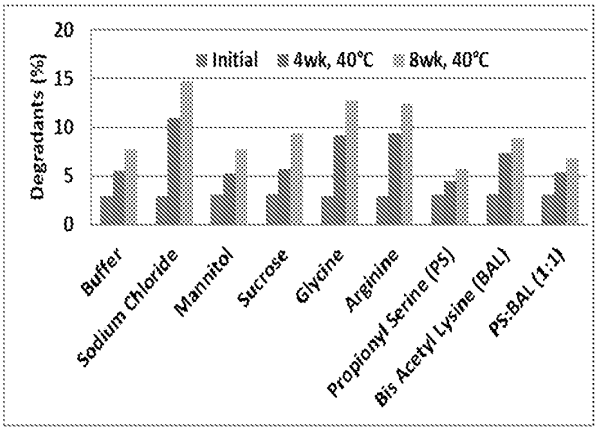



**Figure 21: Percent degradant of mAb formulations in Table 5 at initial and following 4 and 8 weeks of storage at 40°C. Percent degradant was determined using SEC-HPLC.**

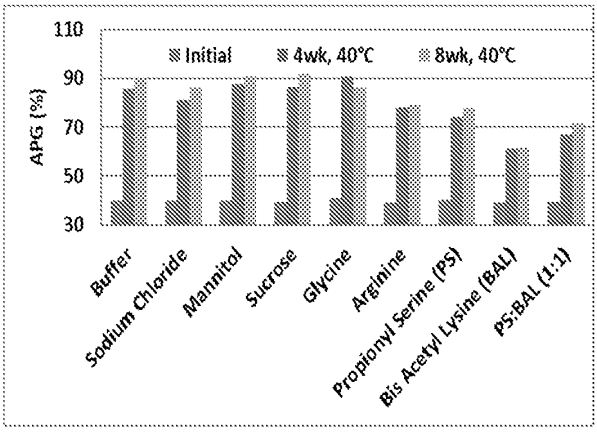



**Figure 22: Percent acidic peak group (APG) of mAb formulations in Table 5 at initial and following 4 and 8 weeks of storage at 40°C. Percent APG was determined using IEC-HPLC.**

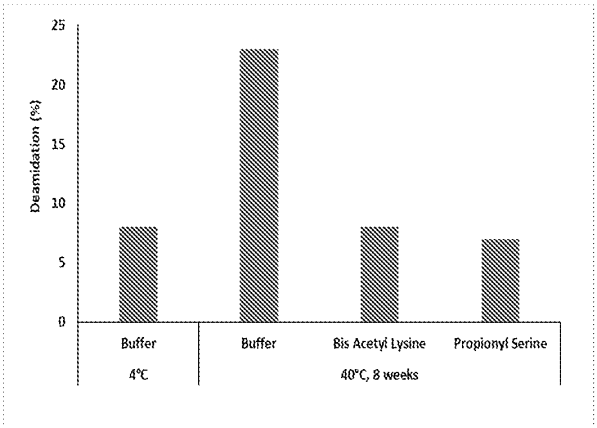



**Figure 23: Percent deamidation of mAb formulations in Table 7. Percent deamidation was determined using mass spectroscopy.**

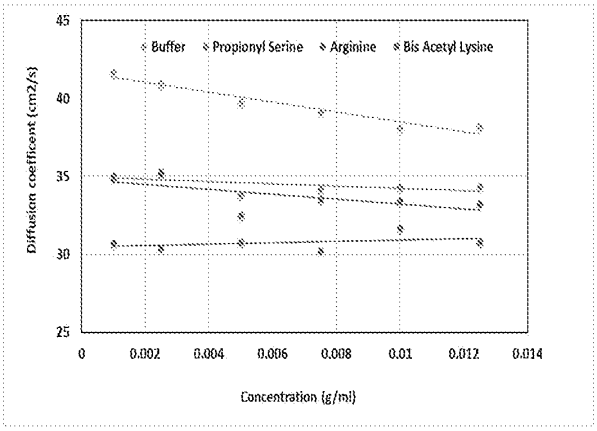



**Figure 24:** Mutual diffusion coefficient ($D_m$) as a function of antibody concentration in a control buffer (10 mM phosphate [pH 8.0]) and buffer containing 300 mM arginine, 300 mM bis acetyl lysine, or 300 mM propionyl serine. Measurements were carried out using a Zetasizer Nano ZS series instrument at 25°C.