Research Notes

Arm & Hammer Animal and Food Production

Effect of CELMANAX Dry and Liquid on *E. coli* agglutination

STUDY OVERVIEW

- In this study, CELMANAX™ Dry, CELMANAX Liquid and a competitive product were tested for their ability to agglutinate F18 and K88 *E. coli* in an *in vitro* experiment.
- The agglutinating ability of the Mannan Oligosaccharide (MOS) component of CELMANAX was determined using both a slide agglutination assay and a broth agglutination assay.
- Three MOS products were tested (a leading brand, CELMANAX Dry and CELMANAX Liquid) at three different concentrations (2, 20 and 40 mg/mL).
- Slide agglutination
  - The *E. coli* strains were grown overnight on Tryptic Soy Agar (TSA) plates containing 5% sheep blood and resuspended with sterile Phosphate Buffered Saline (PBS) to achieve an ocular density of 2.0 on the McFarland scale.
  - Seventy-five µL of each bacterial suspension was mixed on a slide with 75 µL of each MOS product at each concentration.
  - Samples were placed on an orbital shaker for 25 minutes and observed for agglutination.
  - All slides were photographed with a digital camera.
- Broth agglutination
  - The *E. coli* strains were grown overnight on TSA plates and resuspended as described above.
  - The colony count of each *E. coli* suspension was determined by plating and using a hemocytometer.
  - Equal volumes of the *E. coli* samples and MOS concentrations were mixed and incubated at room temperature for 20 minutes on a rocker.
  - After the incubation period, the non-agglutinated bacterial cells from each MOS concentration were counted using a hemocytometer.

RESULTS

- Slide Agglutination
  - Both the F18 and K88 *E. coli* strains were visibly agglutinated by all three MOS products (data not shown).
- Broth Agglutination
  - All three MOS products showed positive agglutination results in the liquid assay ranging from 40 – 80% (Figures 1, 2, 3).

CONCLUSION

CELMANAX™ Dry and Liquid agglutinated *E. coli* at all three concentrations tested.

FIGURE 1: MOS 2 mg/mL, *E. coli* 10^9

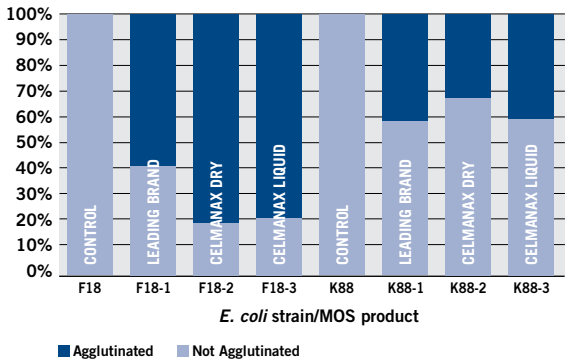


FIGURE 2: MOS 20 mg/mL, *E. coli* 10^9

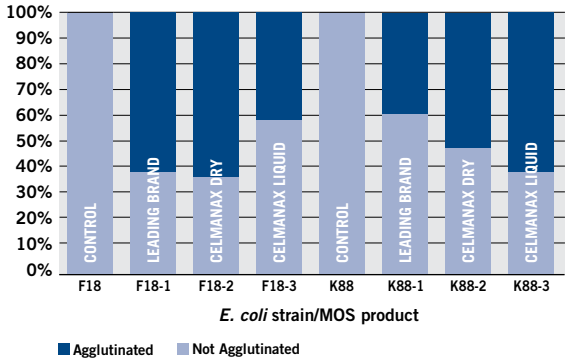
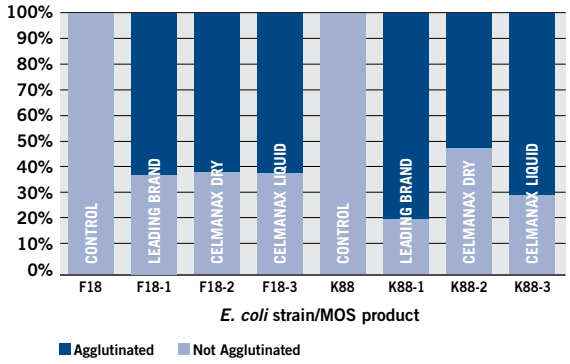


FIGURE 3: MOS 40 mg/mL, *E. coli* 10^9



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