CELMANAX™

EFFECT OF CELMANAX™ DRY & LIQUID ON *E. COLI* AGGLUTINATION

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Introduction: CELMANAX™ is a yeast culture product which has been improved to express more of the functional carbohydrates associated with the yeast culture fermentation process. One of the functional carbohydrates associated with this production process is Mannan Oligosaccharide (MOS). MOS, or mannose, plays an important role in preventing infections by some pathogenic bacteria by agglutinating them and preventing them from binding to the host tissue. In this study, CELMANAX was tested for its ability to agglutinate some pathogenic *E. coli*.

Objective: To test the ability of CELMANAX DRY, CELMANAX LIQUID and a competitive product to agglutinate F18 and K88 *E. coli* in an *in vitro* experiment.

Materials and Methods: The agglutinating ability of the 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 uL of each bacterial suspension was mixed on a slide with 75 uL 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 hemacytometer. 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 hemacytometer.

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.

Results Tables: Percentage Agglutination of Both *E. coli* Strains with 2, 20 and 40 mg/mL Concentration of All Three MOS Products

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

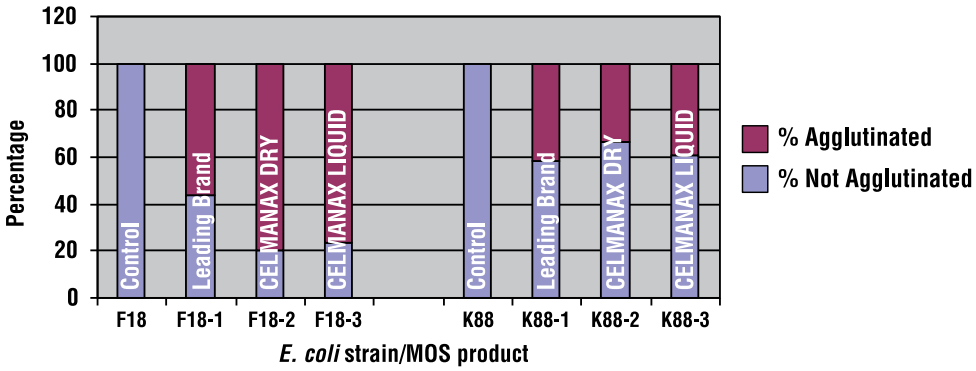


Figure 2: **MOS 20mg/mL, *E. coli* 10^9**

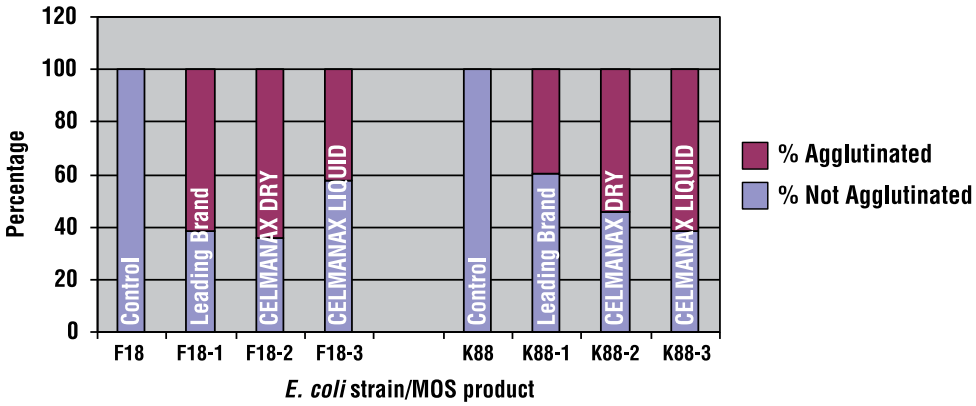
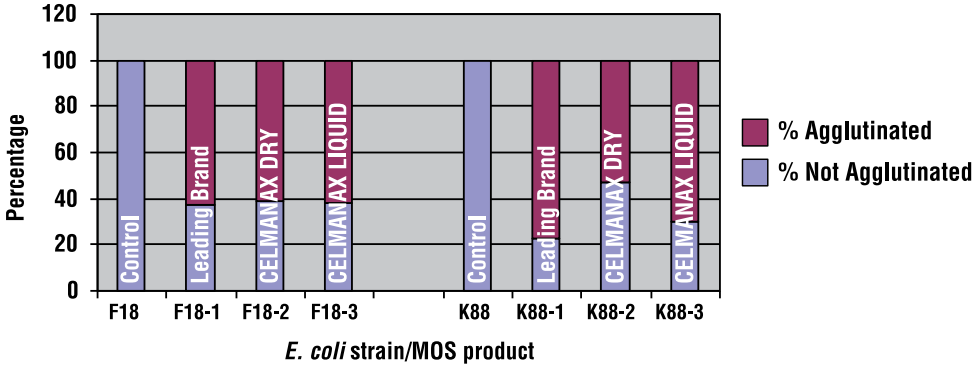


Figure 3: **MOS 40mg/mL, *E. coli* 10^9**



Animal Nutrition

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