**Evaluation of thickening effect of *sesbania* gum and carboxymethyl *sesbania* gum**

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*Sesbania*, as an excellent crop for improving saline-alkaline soils, is widely cultivated in China. The endosperm of *Sesbania* seeds also contains a rich content of galactomannan, known as *Sesbania* gum. However, there is currently a lack of high-purity *Sesbania* gum products in China, and its poor dispersibility and solubility limitations restrict its industrial applications. Therefore, we conducted research on the extraction and purification methods of *Sesbania* gum and further characterized the differences between the purified *Sesbania* gum and other galactomannan gums - guar gum and locust bean gum, in terms of shear rheological properties, tribological characteristics, and extensional rheological behavior. Our results indicate that *Sesbania* gum can achieve the same thickening level as other gums, while exhibiting unique lubrication curves and good extensional rheological properties, demonstrating promising potential for industrial applications. In addition, we modified the *Sesbania* gum samples by carboxymethylation to address their poor solubility. The results showed that after modification, the sample's water solubility and solution transparency were significantly improved. At the same thickening level, the modified *Sesbania* gum exhibited superior lubrication and extensional properties.