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Konjacglucomannan (KGM) of different molecular weights (MW) cultivates different glycosylation sites on cell surface which affect cellular biological functions and metabolism. Mannosylated structures can potentially illicit immune recognition responses via mannose receptor. In this study, we demonstrated the effect of supplementation of β-mannanase treated KGM with different MW distributions in culture media on mammalian cell subjected to shear stress and hypoxia conditions. The non-modified KGM and with higher MW stimulated fibroblast and adipose stem cell proliferation. KGM also helped to reduce detrimental effect of shear stress and hypoxia by 50%. Inverse relationship was observed in HaCaT and keratinocytes, which highlighted the differences in cell surface receptors and the importance of structure-activity relationship to bridge the gap between characterizations and biological properties.

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