CONCLUSION

The ECM components indeed modified the adhesion, proliferation and osteoblast differentiation of hMSCs *in vitro*. Among the ECM components, proteins mainly enhanced hMSC adhesion and proliferation, whereas GAGs significantly enhanced osteoblast differentiation and mineralization. ALPL and osterix were identified as the key genes responsible for the enhanced osteoblast differentiation observed on ECM proteins and GAG treated plates respectively. The difference in the osteoblast differentiation and associated gene expression observed on various ECM component treated plates indicated the difference in the regulatory mechanisms. We have successfully developed ECM based, tripolymer composites consisting of chitosan, collagen type I and hyaluronic acid which holds great promise as a biomimetic coating or scaffold for bone tissue engineering and regenerative therapies.