Synopsis of Original Research Paper

The development of poly (amino acid) that recognizes microenvironment of skin for healthy growth of skin flora

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Skin flora plays an essential role in skin health conditions. Conventional cosmetic strategies can deliver nutrients to the flora, which often facilitates the growth of not only beneficial bacteria but also bad bacteria. In the present study, a new methodology that delivers the nutrients to beneficial bacteria for the selective growth was developed. In design, glucose as a nutrient was conjugated with poly (amino acid) side chains via boronic ester. Thus, the developed system can release glucose in response to weakly acidic pH, which is suitable for the growth of beneficial bacteria. In fact, incubation of the developed polymer system at pH 5 facilitated the release of glucose payload relative to the incubation at pH 8. Ultimately, when *Staphylococcus epidermidis* was selected as a beneficial bacterium, the growth was selectively accelerated in the presence of the developed polymer at pH 5, relative to the conditions at pH 8 which is suitable for the growth of bad bacteria. The obtained results suggest that the developed polymer system potentially achieves the selective growth of beneficial bacteria for good skin health conditions.