Effect of Hydrophilic Polymers on Functional Properties and Wound Healing Efficacy of Hydrocolloid Based Wound Dressings
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Purpose
To investigate the influence of different hydrophilic polymers on the swelling, bioadhesion and mechanical strength of hydrocolloid wound dressings (HCDs) in order to provide an appropriate composition for a hydrocolloid wound dressing system.

Methods
The HCDs were prepared with styrene-isoprene-styrene copolymer (SIS) and polyisobutylene (PIB) as the base using a hot melting method. Additionally, numerous SIS/PIB-based HCDs were prepared with six hydrophilic polymers, and their wound dressing properties were assessed. Finally, the wound healing efficacy of the selected formulations was compared to a commercial wound dressing.

Results
The swelling ratio, bioadhesive force and mechanical strengths of HCDs were increased in the order of sodium alginate > sodium CMC = poloxamer = HPMC > PVA > PVP, sodium alginate > sodium CMC = poloxamer > PVA > HPMC = PVP and sodium alginate PVA ¡Ã PVP = HPMC = sodium CMC > poloxamer, respectively. Among the hydrophilic polymers tested, sodium alginate most enhanced the swelling capacity, bioadhesive force and mechanical strengths. Thus, the hydrophilic polymers played great role in the swelling, bioadhesion and mechanical strength of SIS/PIB-based HCDs. The HCD formulation composed of PIB, SIS, liquid paraffin and sodium alginate at the weight ratio of 20/25/12/43 gave better wound dressing properties and more excellent wound healing efficacy than the commercial wound dressing.

Conclusion
The novel HCD formulation could be a promising hydrocolloid system for wound dressings.