

is most commonly normalized by three RNAs, that is, β -actin, rRNA, and glyceraldehyde-3-phosphate-dehydrogenase (GADPH). It obtains appropriate normalization though many factors are relevant. However, there is not a particular strategy applicable to every situation.

6.6 IONIC DISSOLUTION PRODUCTS OF BIOACTIVE GLASSES

Glasses constitute an important group of bioactive materials with potential tissue engineering applications. When the bioactive glasses are exposed to biological fluid, they reveal the ability to bond with hard/soft tissues along with osteoinduction (Hoppe et al., 2011; Hench, 1998; Rezwani et al., 2006; Kokubo, 1998; Hench et al., 2004; Boccaccini and Blaker, 2005). Bioactive glass possesses the ability to form a hydroxyapatite (HAp) layer upon its contact with the biological fluid (simulated body fluid (SBF)). The HAp layer causes strong bonding behavior between the bone and bioactive glasses. Bioactive glasses have shown antibacterial and angiogenesis potential (Day, 2005; Allan et al., 2001; Gorustovich et al., 2010a; Munukka et al., 2008; Stoor et al., 1998; Yli-Urpo et al., 2003; Leu and Leach, 2008; Leppäranta et al., 2008; Gorriti et al., 2009; Hu et al., 2009; Jones et al., 2006) (Fig. 6.9). It has also been observed that the ionic dissolution products from bioactive glasses stimulate gene expression for the osteoblastic cells.

Xynos et al. (Xynos et al., 2000, 2001) provided many key findings regarding the ionic dissolution products released from 45S5 Bioglass. The results showed that a rapid shift in cell population occurred toward the mature osteoblasts, ultimately causing mineralized bone nodules without addition of

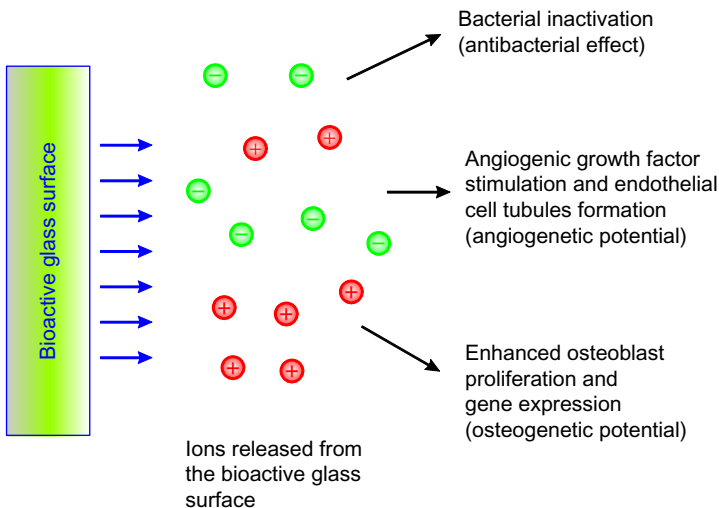


FIG. 6.9 Potential of ionic dissolution products released from bioactive glasses.