

# Angiogenic Attributes of Multifaceted Bioactive Glass: Its Therapeutic Potential on Soft Tissues and Drug Delivery Utilization

Vidya Krishnan<sup>a</sup>

*Department of Oral Medicine and Radiology, SRM Kattankulathur Dental College and Hospital, SRM University, Chennai, India*

## 12.1 FUNDAMENTALS OF ANGIOGENESIS

The development of new blood vessels is angiogenesis, which is a continuous process all through life, both when the body is healthy and diseased. Hemodynamic factors alter the structure and network of vessels. [Hunter \(1794\)](#) was the first to record his scientific observation, which seconds the postulate of Aristotle that, “Form is defined by function.” [Folkman \(1971\)](#) initiated the modern hypothesis that any tumor growth depends on its angiogenesis. This recognition suggested that treatments can be formulated by controlling its angiogenesis ([Adair and Montani, 2010](#)).

### 12.1.1 Formation of Blood Vessels

The very first organ system which is formed in the embryo is the cardiovascular system. Hemangioblasts are formed from the mesodermal stem cells, which in turn differentiate into hematopoietic stem cells and angioblasts. The genesis of vascularity is an active process with exchanges among cells and with extracellular matrix synchronized by growth factors and morphogens. The angioblasts in turn form endothelial cells ([Risau, 1995, 1997](#); [Schmidt et al., 2007](#)).

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a. Dedicated to my VIDASH family Shanu, Tg, and Mithi