IMPORTANT ROLES OF PPAR IN STEM CELL DIFFERENTIATION

Aims & Scope:

Peroxisome proliferator-activated receptors (PPARs) are a group of ligand-dependent nuclear receptors responsible for gene expression regulation and function as transcriptional regulators of adipogenic differentiation and lipid metabolism. Members of PPAR family, especially PPAR gamma, are predominantly expressed in adipose tissue and have been demonstrated as important regulators of stem cell differentiation. Suppression of PPAR function through RNA interference leads to cellular differentiation towards osteoblasts rather than adipocytes in multipotent mesenchymal stem cells, suggesting the central role of PPAR in controlling multipotency in mesenchymal cells. On the other hand, the effects of PPAR-gamma on cancer progression and metastasis have also been studied intensely. More specifically, studies of cancer stem cells indicate that PPAR gamma agonists have the potential to inhibit the canonical WNT signaling pathway that controls the self-renew of cancer stem cells. New advances of PPAR in stem cell differentiation indicate the therapeutic potential of PPAR in treating obesity, regenerating adipose tissue, and suppressing cancer stem cells.

Keywords:
Peroxisome proliferator-activated receptors, Stem Cell Differentiation, Adipogenesis, Osteogenesis, Regenerative medicine.

Adverse drug reactions; elderly; pharmacokinetics; pharmacodynamics; pharmacogenetics; aging

Subtopics:

- PPAR stem cell differentiation and obesity: biology of PPAR family, roles of PPAR in adipogenic differentiation of stem cells, and therapeutic targets on PPAR regarding obesity prevention
- PRAR in regenerative medicine: molecular function of PPAR in the differentiation of stem cells towards adipocytes
- Perspectives of PPAR in fat regeneration
- Cross talking between PPAR and WNT/BMP signaling and its regulation on stem cell differentiation
- PRAR and cancer stem cells: expression and function of PPAR in cancer stem cells
- PPAR as a tumor suppressor
- PPAR as a prognostic marker

Schedule:
Manuscript submission deadline: Sep 2014
Peer Review Due: Oct 2014
Revision Due: Nov 2014
Notification of acceptance by the Guest Editor: Dec 2014
Final manuscripts due: Dec 2014