Tentative Outline

Special Issue for Current Medicinal Chemistry

Guest Editor: Dr. Ali Yadollahpour
Guest Editor: Dr. Myles Jones

Cytokines in the genesis and treatment of autoimmune diseases

Aims & Scope:

Cytokines due to their unique immunomodulatory, anti-viral and anti-proliferative characteristics, have promising potentials in treatment of immune-mediated medical disorders including cancers and viral infections. Cytokines are molecular messengers that mediate different biological processes of the autoimmune systems including immunity, inflammation, differentiation, cell proliferation, and fibrosis. As the major regulators of innate and adaptive immunity, cytokines enable cells of the immune system to communicate over short distances. The current evidence demonstrates that the dysregulation of cytokines significantly contributes to the pathogenesis of autoimmunity and different cancers. Excessive production of proinflammatory cytokines, or reduced levels of regulatory cytokines result in immunopathogenesis of different diseases. Several studies have demonstrated that cytokines based theranostics would be key contributors in diagnosis and treatment of cancers and different autoimmune disorders. Cytokine therapy is defined as altering or activating immune homeostasis to restoring the affected cytokines associated with the disorders. The key concept of cytokine therapy is restoring optimal cytokine balance in the target organ or system. This could be achieved through either by blocking inflammatory cytokines or inducing or providing anti-inflammatory ones. To date, interferons have been approved for cytokine therapies in clinical practice. Interferon (IFN)-α is approved for treatment of hairy cell leukemia, and interleukin (IL)-2 for the treatment of advanced melanoma and metastatic renal cancer. In addition, IFN gamma (IFNγ), IL-7, IL-12, IL-15, IL-21, and granulocyte macrophage colony-stimulating factor (GM-CSF) are under evaluations in clinical trials for different disorders.

The main issue with cytokine therapy is that cytokines in monotherapy do not lead to significant clinical outcomes. This is mainly because parenterally administered cytokines do not reach sufficient concentrations at the tumor site. Moreover, cytokines are often associated with severe toxicities, and induce humoral or cellular checkpoints. One approach to overcome these limitations is using cytokines in combination with other anti-tumor agents to induce enough tumor-specific immune responses. Cytokines are being investigated in combinations with cancer-directed monoclonal antibodies and checkpoint inhibitors (CPIs), novel engineered cytokine mutants (superkines), chimeric antibody-cytokine fusion proteins (immunokines), anticancer vaccines to increase the antibody-dependent cellular cytotoxicity (ADCC) of these antibodies.

This thematic issue aims to review the recent advances on cytokine therapy in genesis and treatment of autoimmune disorders, the clinical applications of cytokine therapies in cancer and major immunology disorders treatment overviews the literature on knowledge and clinical applications of cytokines either as monotherapy or in combination with other biological agents. We emphasize a discussion of future directions for research on these cytokines, to bring them to fruition as major contributors for the treatment of metastatic malignancy.

Keywords: cytokines, cancer treatment, cytokine therapy, autoimmune diseases, immunotherapy

Subtopics:

- Cytokine therapy and autoimmune disorders
- Cytokines and Tumor immunotherapy
- Cytokines and Cardiac Fibrosis treatment
- Antibody targeted medications and cancer treatment
- Clinical applications of cytokines
- Cytokine therapies and malignant melanoma
- Cytokines and Hairy cell leukemia
- Cytokines and AIDS-related Kaposi's sarcoma
- Cytokines in combinatory cancer treatment
- Cytokine-antibody fusion molecules and cancer treatment
- Cytokines and vaccine therapy in autoimmune disorders
- Cytokines and adoptive cell therapy

Schedule:

- Manuscript submission deadline: 30 April, 2020
- Manuscript submission deadline: 10 May, 2020
- Peer Review Due: 20 May, 2020
- Revision Due: 05 June, 2020
- Announcement of acceptance by the Guest Editors: 10 June, 2020
- Final manuscripts due: 15 June, 2020