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**Review Article** **Published Date:-2019-12-18 00:00:00**

## A review on the occurrence of opportunistic infections after applications of stem cell techniques

In recent years, stem cells technology have been used widely in basic and clinical science researches LIPUS (low-intensity pulsed ultrasound) is another technique commonly used in conjunction with stem cells that can have complications after applications. One of the important issues in using this modern technique is the occurrence of opportunistic infections and inflammatory reactions in the rejection or destruction of these cells and in turn making ineffective of its applications, which have been reviewed in the following.

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**Review Article** **Published Date:-2019-12-09 00:00:00**

## Natural killer cells in patients with hematologic malignancies, solid tumors and in recipients of hematopoietic stem cell transplantation

Natural killer cells represent the first line of defense against infections and tumors and can be derived from various sources including: bone marrow, peripheral blood, specific types of human stem cells, and certain cell lines. The functions of natural killer cells are influenced by: several cytokines, activating and inhibitory receptors, as well as other immune cells such as dendritic cells and mesenchymal stem cells.

Natural killer cells are attractive candidates for adoptive cellular therapy in patients with hematologic malignancies and solid tumors in addition to recipients of various forms of hematopoietic stem cell transplantation as they enhance antitumor effects without causing graft versus host disease. Several clinical trials have shown safety and efficacy of natural killer cell products obtained from autologous as well as allogeneic sources and used in conjunction with cytotoxic chemotherapy, monoclonal antibodies and novel agents.

The following review, which includes extensive literature review on several aspects of natural killer cells, will give particular attention to: the rising role of natural killer cell therapies in patients with malignant hematological disorders, solid tumors and in recipients of stem cell therapies; preparation and manufacture of natural killer cell products; challenges facing the utilization of this form of cellular therapy including evolution of resistance; and maneuvers that can be employed to enhance the efficacy of natural killer cell therapies as well as suggested solutions to resolve the remaining challenges.

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**Short Communication** **Published Date:-2019-11-08 00:00:00**

## Human mesenchymal stem cells conditioned media promotes the wound healing process - An in vitro study

Mesenchymal stem cells (MSCs) conditioned medium (CM) has a promising prospect towards skin regeneration. Therefore, human dental pulp and adipose stem cells (DPSCs and ADSCs) were isolated, propagated and evaluated for their stemness and genetic stability over time in culture before making CM. We aimed to characterize the applicability of lyophilized ADSCs and DPSCs derived CM (AD-CM and DP-CM) at 5 mg, 10 mg and 20 mg for wound healing process. The ability of wound closure was assessed by direct human dermal fibroblast cell scratch assay, treated with variable concentrations of AD-CM and DP-CM in vitro. Additionally, we also assessed the expression of different cytokines and growth factors secreted from ADSCs and DPSCs in the CM relevant to the wound healing by cytokine array analysis. Our data demonstrates a significant effect of both the AD-CM and DP-CM in wound healing within 24 hrs compared to that in control.

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**Editorial** **Published Date:-2019-10-01 00:00:00**

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[The rising role of natural killer cells in patients with malignant hematological disorders and in recipients of hematopoietic stem cell transplantation]

Natural killer (NK) cells, the third population of lymphoid cells, comprise 5%-25% of peripheral blood (PB) lymphocytes and represent the first line of defense against infections and tumors [1-7]. They can be derived from: bone marrow, PB, cryopreserved umbilical cord blood (UCB), human embryonic stem cells (hESCs), induced pluripotent stem cells (iPSCs), and various cell lines such as NK-92 and KHYG-1 [1]. NK cells; which have been divided into cytotoxic, tolerant, and regulatory subsets; are classified into: (1) naïve CD56 bright CD 16 dim CD 3 dim cells, (2) mature CD56 dim CD16 bright CD3 dim cells, and (3) lymphoid tissue-resident CD69+/CXCR6+ NK cells [1,2,8-11]. Although NK cells have been traditionally considered as part of the innate immune system, they have recently been shown to exhibit many of the features associated with adaptive immunity [8,12]. The functions of NK cells which are influenced by several cytokines include: elimination of infected cells, destruction of cancer cells, reducing the incidence of graft versus host disease (GVHD) following hematopoietic stem cell transplantation (HSCT), and regulation of pregnancy outcome [10,11,13].

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**Review Article** **Published Date:-2019-09-04 00:00:00**

[Advances in the use of GABAergic interneurons for the treatment of epilepsy]

Forebrain GABAergic neurons, the main inhibitory type of neuron in the cortex and hippocampus, represent a highly heterogeneous cell population that has been implicated in the predisposition to epilepsy and the onset of seizure. Earlier attempts to restore inhibition and reduce seizure in animal models of epilepsy have been carried out using embryonic basal forebrain tissue as source of immature GABAergic progenitors in cell-based therapies, with promising results. For therapeutic strategies this approach appears unrealistic, while the use of pluripotent stem cells to obtain immature GABAergic neurons opens new and promising avenues. Research on neural stem cells and pluripotent stem cells has greatly advanced and protocols have been established to efficiently direct progenitor cells to differentiate towards the GABAergic lineage. However, being highly heterogeneous, these neurons are difficult to be fully represented in vitro. Better knowledge on the expressed gene profiles, at single cell level, and the differentiation trajectory of these neurons will consent a more precise monitoring of the differentiation steps. Here we review the current literature about how to obtain and characterize genuine inhibitory neurons, how these can be grafted in animal models (and one day possibly in human) and which diseases could potentially be targeted and the efficiency of therapeutic outcome. The main obstacles that need to be overcome are: a) choice of an appropriate animal model, b) availability of human cells prone to GABA differentiation, c) the full representation of all IN subtypes, their proportions and their physiological activities, d) how to monitor them on the long-term after transplant.

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**Research Article** **Published Date:-2019-02-12 00:00:00**

[Application of autologous adipose-derived stem cells for thin endometrium treatment in patients with failed ART programs]

One of the factors of assisted reproduction technology (ART) success is an adequate growth and development of endometrium. At the end of follicular phase of menstrual cycle endometrium reaches its greatest thickness. It is believed that there is a critical limit of endometrial thickness beyond which the implantation of embryo is unlikely or impossible [1-5]. In practice of ART programs ultrasound measurement of endometrial thickness is used to evaluate uterine lining growth. Scientific literature is debatable as to what thickness of endometrium should be considered optimal, some researchers emphasize the negative impact of “thin endometrium” on the success of ART programs [1-12], while others do not agree [6,7,9]. Nevertheless, when endometrial thickness in ART program does not exceed 6 mm the chance of pregnancy occurring is very low (Kumbak B, et al. 2009).

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