

**INDUCED PLURIPOTENT STEM CELL THERAPY IN PARKINSON DISEASE”  
EXPLORING BENEFITS, COST AND RISK**

<sup>1</sup>Sai Sree Vardhan B.\*, <sup>2</sup>N. Spoorthi, <sup>3</sup>P. Prasad, <sup>4</sup>Bhanu Sanjana K. and <sup>5</sup>Dr. Mohammed Rasheed

<sup>1,2,3,4</sup>Doctor of Pharmacy, Pratishta Institute of Pharmaceutical and Sciences, Durajpally, Suryapet, Telangana.

<sup>5</sup>Assistant Professor cum Clinical Pharmacist, Pratishta Institute of Pharmaceutical and Sciences, Durajpally, Suryapet, Telangana.

**\*Corresponding Author: Sai Sree Vardhan B.**

Doctor of Pharmacy, Pratishta Institute of Pharmaceutical and Sciences, Durajpally, Suryapet, Telangana.

Article Received on 02/08/2025

Article Revised on 23/08/2023

Article Accepted on 13/09/2023

**ABSTRACT**

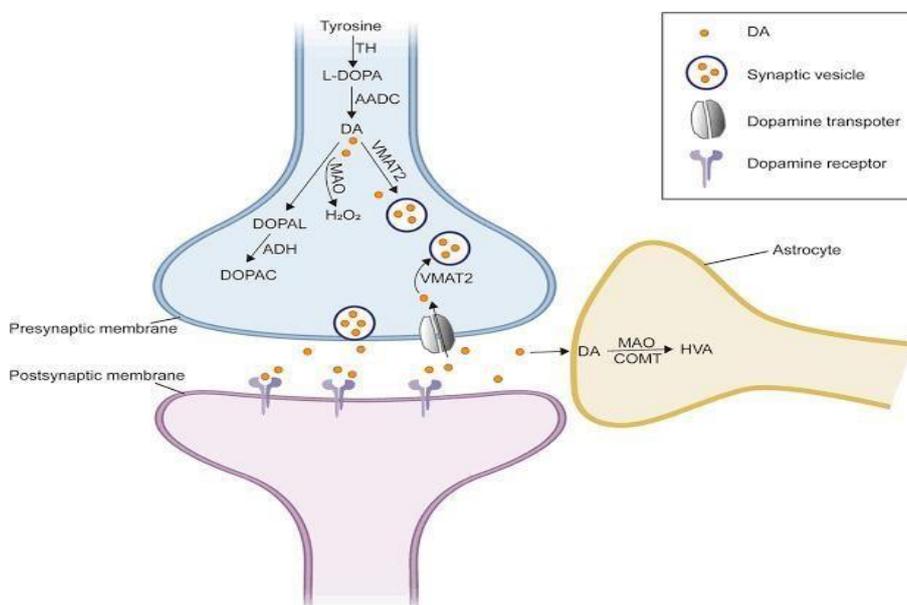
**Aim:** This article is about on treatment approach in stem cell therapy for Parkinson disease. The steam cells are administered through IV injection into the patient, when administered of IV injection we find inflammations in particular areas, A major benefit of stem cell treatment in Parkinson disease is restore the normal functions of dopamine producing brain cells lost in Parkinson. But administration of IV may risk to form the dangerous Tumors. Cost of therapy is the concern for several conditions. But comparedto other countries, Induced pluripotent Stem cell treatment cost in India is affordable price varies from \$8000 USD and 15,000 USD depending on the personal and medical needs of the patient. **Objective:** The objective of the study is approaching the Induced pleuripotent stem cell treatment in Parkinson disease with benefits and risks including Cost of treatment in Parkinson patients. **Methodology:** We used various tools to gather the data which include database such as science direct, Pubmed, Medscape and Medline. **Result:** In this research article we provided how approaching of induce pluripotent Stem cell therapy. Involves in Parkinson disease to replace or repair damaged or lost in the brain associated with Parkinson diseased patients. 9 to 33 % are success rate and potential risks using of iPS therapy in Parkinson patients and also we provided update information regarding on cost for iPS therapy.

**KEYWORDS:** Parkinson, Dopamine, Induced pluripotent stem cells, Treatment.

**BACKGROUND**

Parkinson is a progressive disorder where dopamine levels are decreased in the midbrain at substantia nigra. Normally Dopamine operates a delicate balance with

Other neurotransmitters to help coordinate the millions of nerve and muscle cells involved in movement. Without enough dopamine this balance is disrupted resulting in tremor, Rigidity, Slowness of movement.



The metabolic pathway of Dopamine.

### Parkinson are diagnosed by major 4 signs

1. Bradykinesia
2. Tremors
3. Muscle stiffness
4. Postural instability

The stem cells is a class of immature cells that are able to differentiate or mature into specialized cell types. They are found in many parts of our body.

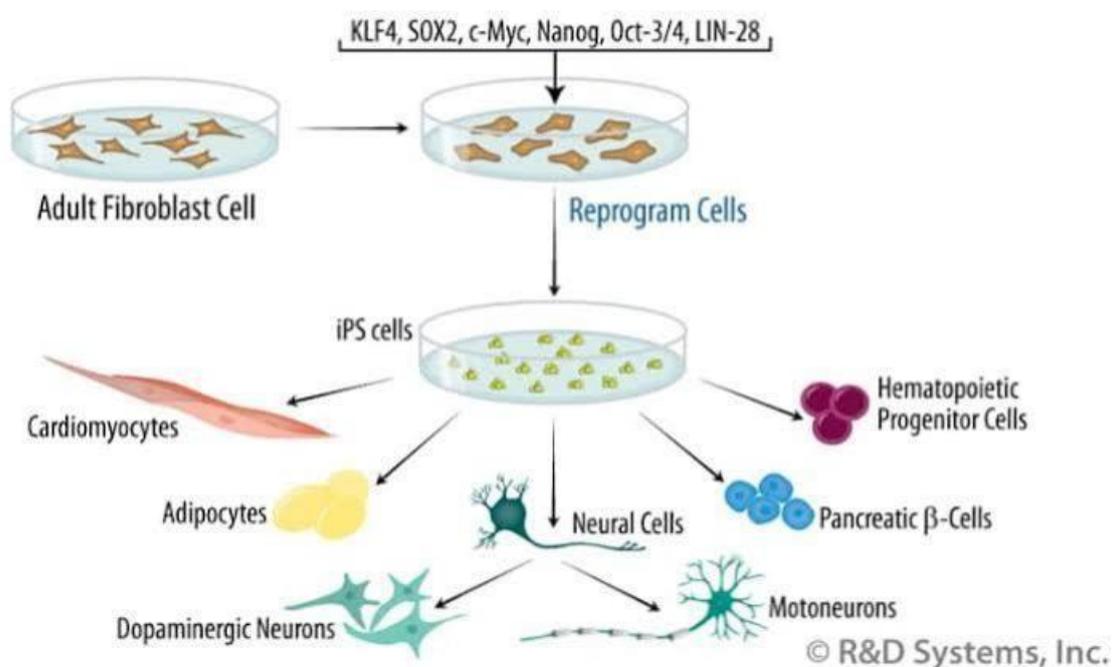
There are 3 types of stem cells

**1. Embryonic stem cells:** These cells are pluripotent. Meaning they can transform it into many types of cells found in your body.

**2. Somatic Stem cells:** it is also called adult stem cells. These mostly perform repair functions. They can still transform but not into specialized cells.

**3. Induced pluripotent stem cells:** These cells are made by genetically changing cells that have already matured.

• **Induced pluripotent stem cells in Parkinson therapy:** This therapy can be made from a patient's adult skin cells in the lab and then used to make dopamine-producing neurons. Recent studies in rat and monkey models of Parkinson's disease have shown that dopamine-producing neurons survive and mature with good outcomes. Generally, it has the potency to differentiate into any tissues in the body.



**Treatment procedure:** The success rate of treatment is proportional to the patient's age, the duration of the disease, and the patient's condition. If the disease has progressed, treatment may need to be applied more than once.

The size of administered stem cells is small enough to pass through the brain cells. Success rate of this treatment is better significantly in early diagnosis. The induced pluripotent treatment is performed 3 sessions 45 days apart or in 3 consecutive days. The number of cells administered is determined according to age and weight of the patient.

- **Method of generation:** Generated from somatic cells such as skin and blood cells.
- **Major benefits of induced pluripotent stem cells:** It can change into various cells in the body. Can proliferate indefinitely. No immune rejection in case of autologous transplantation of iPS cells derived from somatic cells.

Donor cells are easily and non-invasively obtained, with no embryo destruction.

### Major risks of induced pluripotent stem cells in PD

Transplantation site reactions, immune response to the transplanted cells, ectopic grafting, tumorigenicity, and lack of functional characteristics, inappropriate stem cell migration, and neurological complications.

• **Cost of Induced Stem cell therapy:** In India, it may vary from 15 to 25 lakhs. It may depend on cost factors. Factors that affect cost: Cost of iPS stem cell therapy can vary significantly on several factors.

• **Clinic location:** Treatment can impact pricing due to regional variations in labor costs and overhead expenses.

• **Clinician experience:** Highly experienced clinicians may charge high when compared to less experienced clinicians.

• **Treatment frequency:** Some conditions may require multiple sessions, which can increase the overall cost.

**DISCUSSION**

The studies on the Parkinson disease explains on the Induced pluripotent stem cell therapy. But our article evaluates about treatment approach and the benefits of therapy in Parkinson patients also we explored the risks and cost of therapy in India.

**CONCLUSION**

We concluded that the Patient who is subjected with Parkinson when undergoing stem cell therapy 9 to 33%, increased their motor symptoms with high benefits and low risk. In India this therapy is less cost when compared with other countries.