

Utilization of extracellular vesicles for treatment of Type 1 Diabetes Mellitus (T1DM) along with 2 T2DM besides complications associated with diabetes



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Abstract

We have earlier reviewed both etiopathogenesis along with therapy of both type1 Diabetes Mellitus (DM) (T1D) as well as (T2D) thoroughly along with advances in therapy. Despite that there is no permanent cure and with the growing epidemic of obesity and thus the parallel enhancement of worldwide prevalence. Extra cellular vesicles (ECV) by definition are physiologically bilayered vesicles that carry bioactive receptors, lipids, proteins as well as nucleic acids which cross-react with target cells, driving the modification of target cells. Maximum cells liberate ECV as well as recently have been shown to not only work as promising biomarkers for disease but work as therapeutic agents for some diseases. ECV represent a heterogeneous population of small membrane vesicles (30-2000nm) liberated from various types of activated or apoptotic cells. In view of their ability of carrying out cell-cell communication, lot of significance has been given to them regarding their role as biomarkers or as utilization for therapy by trying to overtake cell based therapy. DM Be it T1D or T2D both if uncontrolled for long have the potential of causing a lot of complications like kidneys, cardiac, neuronal, eyes, feet problems ending with chronic end stage kidney disease, blindness, stroke, myocardial infarction (MI), erectile dysfunction, diabetic foot ulcers and gangrene, hence some permanent methods are sought to cure these. Here we conducted a systematic review utilizing the MeSH terms; type1 Diabetes mellitus; T2D; stem cells sources for DM therapy; exosomes; Extra cellular vesicles; treatment potential in DM utilizing the search engine PubMed, Google scholar; web of science; embase; Cochrane review library from 2000 to 2020 till date. We found a total of 550 articles out of which we selected 128 articles for this review. No meta-analysis was carried out. Here we have tried to discuss the details of what EV's are, how they can be obtained, their contents, mechanism of actions in curing diabetes along with its complications like; diabetic wound healing; diabetic retinopathy; diabetic nephropathy; stroke; diabetic peripheral neuropathy along with diabetic foot ulcers, erectile dysfunctions. Further the place clinically in trials we have reached in utilizing clinically as well as challenges faced in translation as well as bulk generation, methods utilized for their preservation. Hopefully these will be overcome gradually and soon can get translated in clinical medicine.

Biography

Kulvinder Kaur is the scientific director of DR Kulvinder Kaur Centre For Human Reproduction, Jalandhar, Punjab, India, where she manages the complicated cases of infertility. She graduated from LHMC Delhi in 1980 topping in medicine in all 3 medical colleges thereby getting the DR Devi Chand Gold medal from the late PM Smt Indira Gandhi and also topped in all the MBBS subjects prior to that eg Anatomy, Pathology, Biochem etc making her basics sound and later she managed the endocrine clinic in PGI Chandigarh during her MD days. Following that she reported the 40th world case hydrometrocolpos working in Saudi Arabia and has been working in the field of neuroendocrinology of obesity. GnRH control along with role of kisspeptins, prokineticins in human reproduction, AIDS and Cancer during this period she managed to successfully treat the first case of no gestational choriocarcinoma of uterine body in a young girl medically thereby preserving her fertility-the first case in world literature of its kind.



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