9° Giornata della Ricerca della Svizzera Italiana
Venerdì 15 marzo 2019

Modulo per la sottomissione abstract ricerca di LABORATORIO

Titolo (massimo **15 parole**)

Clinical-grade production and validation of Exosomes for therapeutic applications

Autori (cognome e iniziali, es: Grassi L.)

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Affiliazioni (ospedale o istituto, servizio o reparto, indirizzo, es: Ospedale Regionale di Lugano, Servizio di angiologia, Lugano)

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Testo (massimo **250 parole**, preferibilmente in italiano (accettato anche in inglese), suddiviso in Introduzione, ***Metodi***, ***Risultati***, ***Conclusioni*** e ***Finanziamento***

INTRODUCTION
Exosomes (Exo), nanosized vesicles secreted by cardiac progenitor cells (CPC), inhibit cardiomyocyte apoptosis under stress conditions, while promoting angiogenesis in vitro. They also prevent the early decline in cardiac function after myocardial infarction in rat. The development of a clinical-grade method for large-scale production of exosomes is essential for clinical translation.
METHODS
The developed process: harvest of conditioned medium from large CPC culture, clarification, concentration, diafiltration and sterilizing filtration of Exo through a closed system.
Quality controls (identity/potency/safety of cells and Exo): optimized to achieve the reproducibility and robustness required by GMP regulation. Exo were tested in preclinical in vivo study in small and large animal models.
RESULTS
1. Three Exo lots (scale:8L) produced, ensuring high yield (≥94+8%;3x10E13exosomes/lot), consistent contaminating-proteins removal (≥97+1%); sterile, endotoxin/mycoplasma free product.
2. Dose-dependent anti-apoptotic effect: Viability: Exo0.5ng/ml=14%±13%, Exo5ng/ml=41%±11%, Vehicle=8% ±4%; Cell death: Exo0.5ng/ml=86%±10%, Exo5 ng/ml=46%±9%, Vehicle=105%±25.
3. Pro-angiogenic activity: CD31 expression higher in Exo treated cells (>90%) than in control cells (60%); Tube length: 82% (Exo treated cells), 27% (control).
4. Stable at -80°C for at least one year.
5. Preclinical study in small animals confirmed in vivo functionality of intramyocardial injected Exo: significantly preserved LVEF compared to control at 4 wks. Large animal tests in ischemic/reperfusion model is completed, to date the primary endpoint of safety has been achieved. Data for efficacy endpoint are under evaluation.
CONCLUSION
The GMP-method for large-scale production of Exo opens new perspectives for reliable human therapeutic applications for acute myocardial infarction.

FINANCIAL SUPPORT: Fondazione Cardiocentro Ticino, Swiss National Foundation.

Visto superiore* (prego indicare **Nome e Cognome** del superiore) ***campo obbligatorio**

Marina Radrizzani

Criteri per sottomissione Abstract:
NO Case report
NO Abstract senza nessun risultato
VISTO da un superiore

Invio Abstract