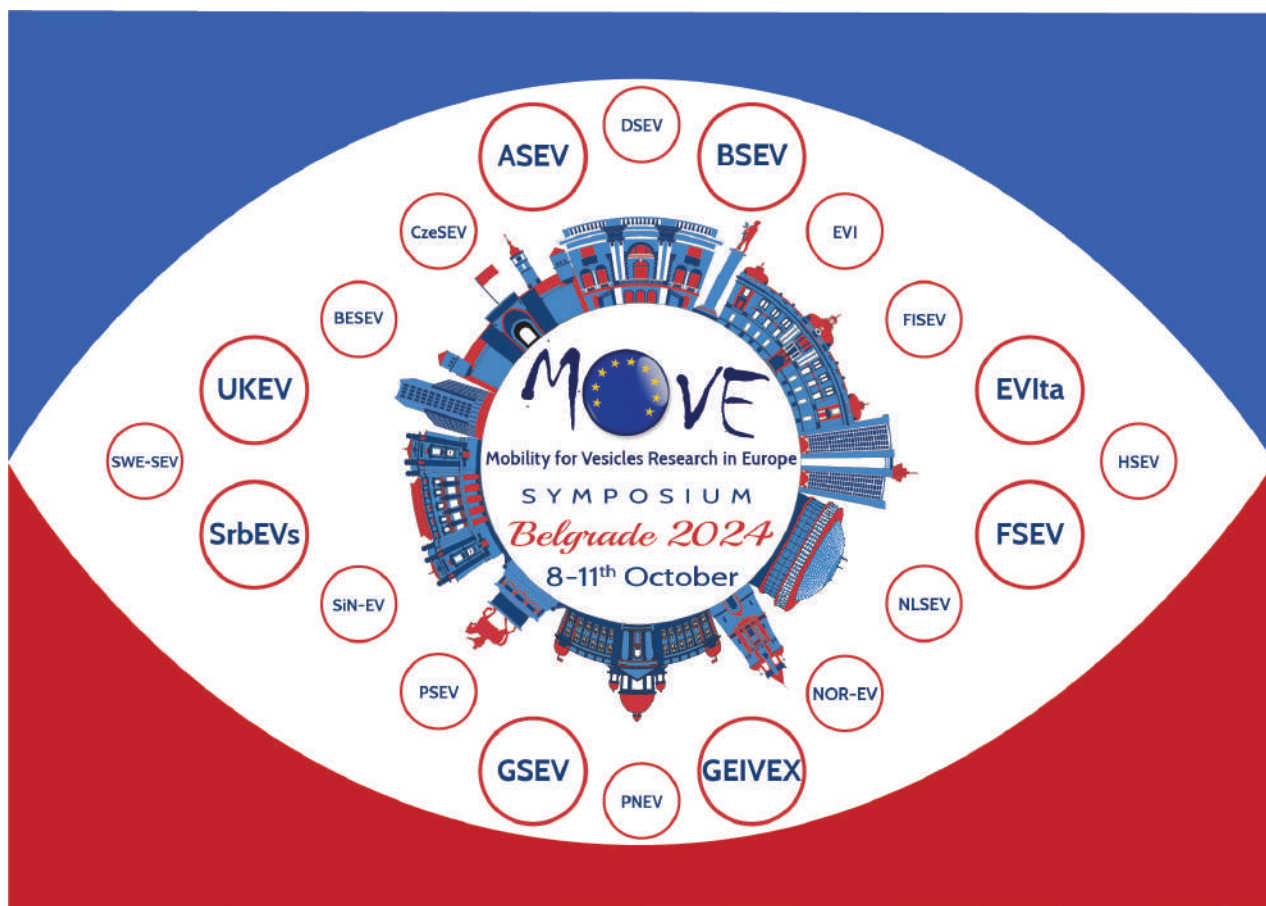


2nd MOVE Symposium



presented by

European National Societies for Extracellular vesicles



Abstract book



2nd MOVE Symposium

8-11 October 2024, Belgrade, Serbia

Organizing Societies

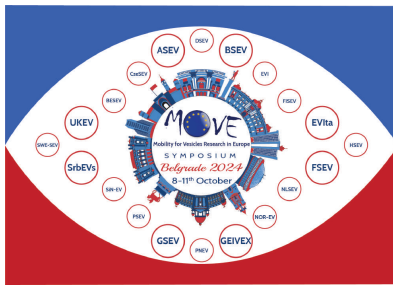


Serbian Society for Extracellular Vesicles, SrbeEVs
 Austrian Society for Extracellular Vesicles, ASEV
 Baltic Society for Extracellular Vesicles, BSEV
 Italian Society for Extracellular Vesicles, EVIta
 French Society for Extracellular Vesicles, FSEV
 Spanish Society for Extracellular Vesicles, GEIVEX
 German Society for Extracellular Vesicles, GSEV
 United Kingdom Society for Extracellular Vesicles, UKEV

Supported by Societies



Belgian Society for Extracellular Vesicles, BESEV
 Czech Society for Extracellular Vesicles, CzeSEV
 Danish Society for Extracellular Vesicles, DSEV
 Extracellular Vesicles Network of Ireland, EVI
 Finnish Society for Extracellular Vesicles, FISEV
 Hungarian Section for Extracellular Vesicles, HSEV
 Israeli Society for Extracellular Vesicles, ISREV
 Netherlands Society for Extracellular Vesicles, NLSEV
 Norwegian Society for Extracellular Vesicles, Nor-EV
 Portuguese Network on Extracellular Vesicles, PNEV
 Polish Society for Extracellular Vesicles, PSEV
 Slovenian Network for Extracellular Vesicles, SiN-EV
 Swedish EV Network, Sw-SEV



2nd MOVE Symposium

8-11 October 2024, Belgrade, Serbia

International Organizing Committee

Maja Kosanovic, SrBEVs

Beate Riner, ASEV

Alireza Fazeli, BSEVs

Annalisa Radeghieri, EVIta

Christian Neri, FSEV

Pilar Martin-Duque, GEIVEX

Bernd Giebel, GSEV

Charlotte Lawson, UKEV



2nd MOVE Symposium

8-11 October 2024, Belgrade, Serbia

Scientific Committee

Antonio Marcilla

Dep. for Pharmacy and Pharmaceutical Technology and Parasitology, Faculty of Pharmacy,
University of Valencia, Valencia, Spain

Alicia Llorente

Oslo University Hospital, Oslo, Norway

Bernd Giebel

Institute for Transfusion Medicine, University Hospital Essen, Essen, Germany

Berta Puig

University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Bojana Milutinović

Department of Neurosurgery MD Anderson Cancer Center, Houston, USA

Dhanu Gupta

Department of Paediatrics, University of Oxford, United Kingdom

Frederik Verweij

Div. of Cell Biology, Neurobiology & Biophysics, Department of Biology Faculty of Science,
Utrecht University, Utrecht, The Netherlands

Gema Chiva-Blanch

Health Sciences Studies, Universitat Oberta de Catalunya (UOC) Barcelona, Spain

Getnet Midekessa

Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences and
Institute of Biomedicine and Translational Medicine, University of Tartu, Estonia

Jason Webber

Institute of Life Science, Swansea University Medical School, Swansea University, Swansea, UK and
Tissue Microenvironment Group, School of Medicine, Cardiff University, Cardiff, UK

Jessica Gobbo

Centre Georges-François Leclerc, Dijon, France

Lydia Alvarez-Erviti

Molecular Neurodegeneration Group, Center for Biomedical Research of La Rioja (CIBIR), La Rioja, Spain

Michele Guescini

Biochemistry Department of Biomolecular Sciences, University of Urbino Carlo Bo, Urbino, Italy

Michiel Pegtel

Amsterdam UMC/Cancer Center Amsterdam, Amsterdam, The Netherlands

Milica Popović

Department of Biochemistry, Faculty of Chemistry, University of Belgrade, Belgrade, Serbia

Rossella Crescitelli

Sahlgrenska Center for Cancer Research, University of Gothenburg, Göteborg, Sweden

Tanja Jasmin Kutzner

Institute for Transfusion Medicine, University Hospital Essen, University of Duisburg-Essen, Essen, Germany

Tobias Tertel

Institute for Transfusion Medicine, University Hospital Essen, University of Duisburg-Essen, Essen, Germany

Wolf Holnthoner

Ludwig-Boltzmann-Institute for Traumatology, Vienna, Austria



Collagen Hydrogel Embedded SHED-EVs for Enhanced Osteogenesis

Marija Milivojević¹, Maja Kosanović², Sergej Tomić², Marina Bekić², Miodrag Čolić³, Đorđe Janačković^{1,4}

¹Innovation Center of The Faculty of Technology and Metallurgy, Belgrade, Serbia, ²Institute for the Application of Nuclear Energy, INEP, Belgrade, Serbia, ³Serbian Academy of Sciences, Belgrade, Serbia, ⁴Faculty of Technology and Metallurgy, Belgrade, Serbia

Introduction: Mesenchymal stem/stromal cells (MSCs) from the dental pulp of human exfoliated deciduous teeth (SHED cells) have shown promising results in bone tissue regeneration. The application of SHED-derived extracellular vesicles (EVs) to bone defects can be achieved using biomaterial scaffolds. Collagen scaffolds, which are natural polymers with slow degradation times, are particularly suitable for EVs entrapment. This study aimed to examine the release rate of embedded SHED-EVs from collagen scaffolds and to evaluate their osteogenic capacity when combined with collagen and gradually released.

Methods: SHED-EVs were isolated using differential ultracentrifugation and characterized using nanotracking particle analysis (NTA), Western Blot (WB), and scanning electron microscopy (SEM). The SHED-EVs were labeled with PKH67 fluorescent lipophilic dye and embedded in a collagen hydrogel matrix (0.3% collagen in PBS). The cumulative release of the fluorescently labeled EVs was monitored for 35 days using NTA. The osteogenic potential of the collagen scaffolds with EVs was assessed by analyzing the relative expression of key osteogenic genes in treated SHED cells using RT-PCR.

Results: The isolated SHED-EVs exhibited a uniform size distribution, as confirmed by NTA and SEM analyses, and were positive for CD63 as shown by WB analysis. The release of EVs from the collagen matrix was gradual, with half of the entrapped EVs being released within the first 10 days and an additional 10% released over the subsequent 10 days, followed by a plateau phase. The SHED-EVs embedded within the collagen hydrogel influenced the expression of osteogenic genes.

Conclusion: The use of a collagen matrix for embedding and gradually releasing SHED-EVs provides a promising strategy for enhancing the osteogenic potential of these vesicles in regenerative therapies.

Funding information: This work was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Contract No. 451-03-65/2024-03/200135, 451-03-66/2024-03/200287, and 415-03-66/2024-03/200019)

Publishers:

Serbian Society for Extracellular Vesicles, SrbEVs with
Austrian Society for Extracellular Vesicles, ASEV
Baltic Society for Extracellular Vesicles, BSEV
Italian Society for Extracellular Vesicles, EVIta
French Society for Extracellular Vesicles, FSEV
Spanish Society for Extracellular Vesicles, GEIVEX
German Society for Extracellular Vesicles, GSEV
United Kingdom Society for Extracellular Vesicles, UKEV

Editors:

Maja Kosanovic, SrbEVs
Beate Riner, ASEV
Alireza Fazeli, BSEVs
Annalisa Radeghieri, EVIta
Christian Neri, FSEV
Pilar Martin-Duque, GEIVEX
Bernd Giebel, GSEV
Charlotte Lawson, UKEV

Technical Editor and Design:

Maja Kosanović

ISBN 978-86-905626-1-9

Year: 2024.

Disclaimer: The authors are responsible for the contents
of their abstracts and warrant that their abstract is original.

