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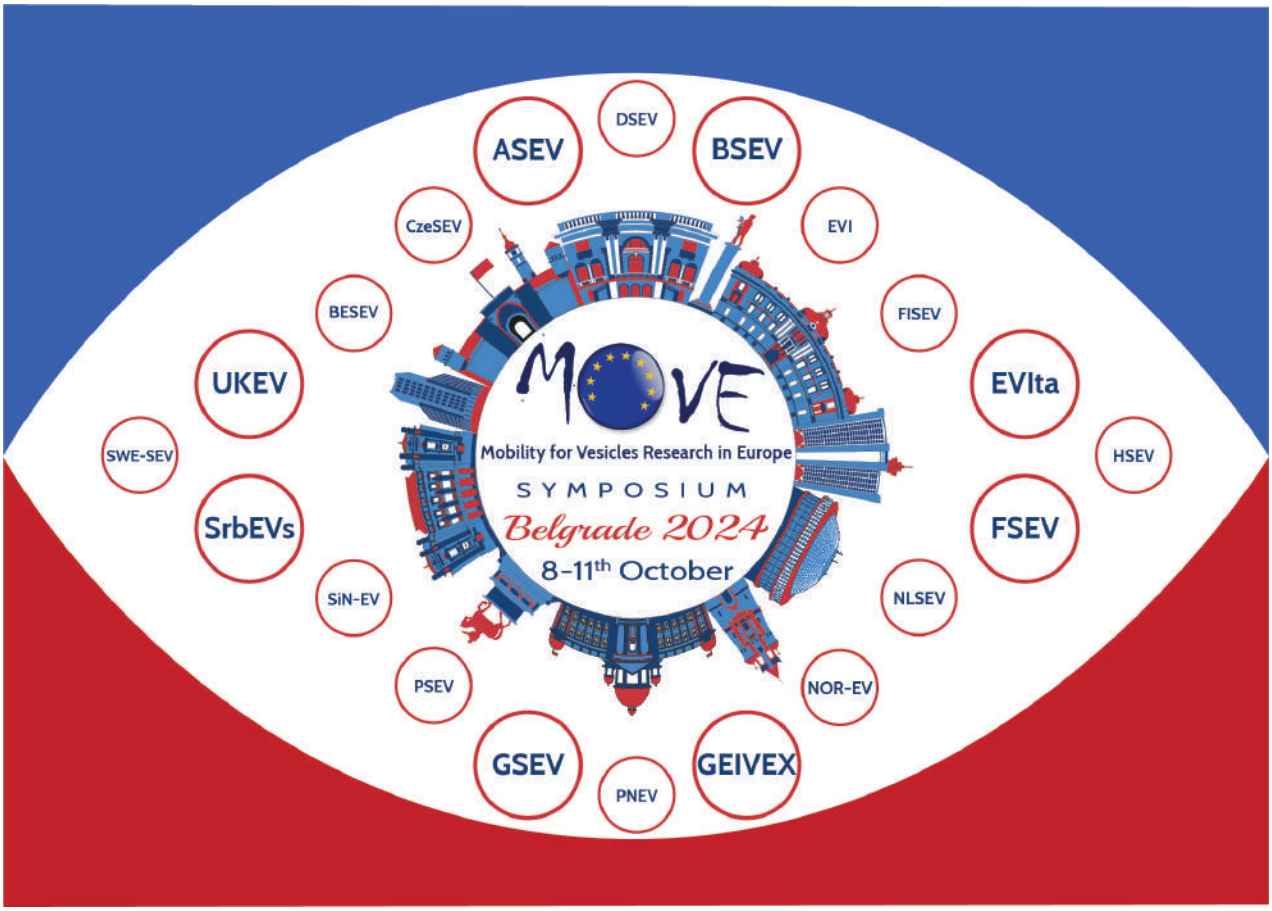

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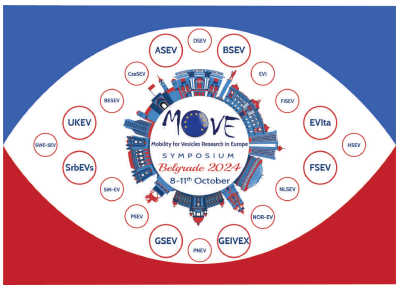

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8-11 October 2024, Belgrade, Serbia

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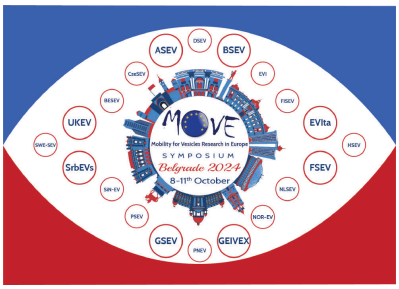

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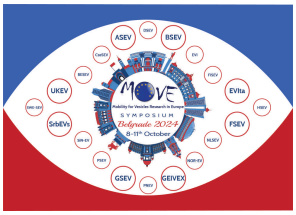

P-I-6

Intranasal application of Trichinella spiralis muscle larvae extracellular vesicles alleviate inflammation in mouse model of respiratory allergy

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Introduction: The parasitic helminth, the nematode Trichinella spiralis, affects the host immune system through its excretory-secretory products (ES L1), which contain extracellular vesicles (EVs) that prevent host immune response to itself and also the development of chronic inflammatory diseases in the host. EVs from T. spiralis muscle larvae (TsEVs) have been shown to exert immunomodulatory properties on human dendritic cells, inducing a stable tolerogenic phenotype and eliciting regulatory T cells (Treg). Furthermore, it has been shown that infection with T. spiralis can alleviate allergic airway inflammation in mice. Therefore, the aim of this work was to investigate whether TsEVs alone have the same effect.

Methods: Allergic airway inflammation was induced in BALB/c mice by intraperitoneal injection of ovalbumin (OVA) in alum followed by intranasal application of OVA. TsEVs were isolated from ES L1 by differential ultracentrifugation and purified by ultrafiltration. TsEVs were administered intranasally on the days of sensitisation and challenge.

Results: Administration of TsEVs resulted in a decrease in the number of eosinophils in the bronchoalveolar lavage, a decrease in the percentage of eosinophils, macrophages and NK cells in the lungs and in a significant decrease in OVA-specific IgE in the sera compared to the untreated mice. In addition, the percent of CD103+ dendritic cells in the lungs of the treated mice was increased and the percent of CD11b+Ly6C+ cells was reduced. Notably, TsEVs led to a significant increase in CD4+Foxp3+ Tregs and IL-10-producing Tregs. Treated mice had significantly lower production of the Th2 cytokines IL-4, IL-5 and IL-13 and increased production of IL-10 from immune cells isolated from the lung and spleen.

Conclusion: These results suggest that TsEVs could be utilised for the development of new therapeutics to alleviate allergic airway inflammation due to their potent immunomodulatory properties.

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