Regenerative Medicine, Artificial Cells and Nanomedicine - Volume 6

NANOBIOTHERAPEUTIC BASED BLOOD SUBSTITUTES

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Opening

•Unlimited Potential of Nanobiotechnology Based Blood Substitutes, Artificial Cells and Nanobiotherapeutics (*TMS Chang*)

General:

- Development and Future of Chinese Transfusion Medicine and Blood Substitutes (J Liu and C Yang)
- The Clinical Impact of Red Blood Cell Storage: What Have the RCTs Told Us? (CP Stowell)
- Rational, Evidence-Based Transfusion: A
 Physiologist's Perspective (GP Biro)
- Hemoglobin-based Oxygen Carriers, Volume Expansion, Fluid Management and Anemia (*TN Estep*)

Hemoglobin-Based Oxygen Carriers:

- Biotechnology-based Oxygen Carriers (TMS Chang)
- Hemoglobin-Glutamer 250 (bovine) [HBOC-201, Hemopure®] Clinical Use in South Africa and Comprehensive Review of Cardiac Outcomes and Risk/Benefit in Peer-Reviewed, Indexed Studies in Humans and Animal Models (JS Jahr, K Tseng, AP Brown and GPDubé)
- Immune Safety Evaluation of Polymerized Porcine Hemoglobin (pPolyHb) — Potential Red Blood Cell Substitutes (H Zhu, K Yan, X Dang, H Huang, EChen, BChen, Chan Luo, TMS Chang, P Dai and C Chen)
- Hemoglobin-Based Oxygen Carriers and Inhaled Nitric Oxide (B Yu and WM Zapol)
- Hemoglobin-Based Oxygen Carriers and Myocardial Infarction: Assessment of Potential Mechanisms (*TN Estep*)
- Insights Into the Possible Mechanisms of Hemoglobin-based Oxygen Carrier-Mediated Bradycardia and Adverse Cardiac Effects Observed in Clinical Trials (HW Kim)
- Modulation of Oxygen Affinity in Hemoglobinbased Oxygen Carriers (EAM Alomari, L Ronda, S Bettati, A Mozzarelli and S Bruno)
- Cysteine Mutations in Recombinant Fetal Hemoglobin Influence Oxidative Side-Reactions (K Kettisen and L Bülow)
- Analysis of Dimeric Aβ Subunit Exchange between Bis-PEGylated and Native Hemoglobins (*T Matsuhira, K Yamamoto and H Sakai*)
- Ring-Opening Polymerization of Hemoglobin Based on Supramolecular Chemistry (*T* Matsuhira, K Yamamoto and H Sakai)

Hemoglobin-Based Oxygen Carriers with Antioxidant Activities:

- Unraveling of Hemoglobin Oxidative Toxicity: Thirty Years of Investigation (AI Alayash)
- A Nanobiotechnologic Therapeutic that Transport Oxygen and Removes Oxygen Radicals (*TMS Chang*)
- Effects of Crosslinked Polyhemoglobin-Superoxide Dismutase-Catalase on Blood-Brain Barrier and Brain Edema in a Hemorrhagic Shock

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- Transient Global Ischemia Rat Model (DD Powanda and TMS Chang) Strategies to Decrease the Oxidative Toxicity of Hemoglobin-Based Oxygen Carriers (L Zhoa) Enhancing the Stability of Lumbricus terrestris Erythrocruorin (LtEc) for Use as a Blood Substitute (B Timm and J Elmer)
- Dual Antioxidant and Pro-Oxidation Effects of Ascorbic Acid on Bovine Hemoglobin (G Chan and TMS Chang)

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- A Novel Nanobiotherapeutical Poly-[Hemoglobin- Superoxide Dismutase-Catalase-Carbonic Anhydrase] with No Cardiac Toxicity for the Resuscitation of a 90-minute Sustained Severe Hemorrhagic Shock Rat Model with Two-third Blood Volume Loss (Y Bian and TMS Chang)
 - Long Term Safety and Immunological Effects of a Nanobiotherapeutic, Bovine Poly-[Hemoglobin- Catalase-Superoxide Dismutase-Carbonic Anhydrase], After Four Weekly 5% Blood Volume Toploading Followed by a Challenge of 30% Exchange Transfusion (G Chen and TMS Chang)
 - Extraction of Superoxide Dismutase, Catalase and Carbonic Anhydrase from Stroma-free Red Blood Cell Hemolysate for the Preparation of the Nanobiotechnological Complex of PolyHemoglobin-superoxide Dismutase-Catalase- Carbonic anhydrase (C Guo, M Gynn and TMS Chang)
 - Temperature Stability of Poly-[hemoglobinsuperoxide Dismutase-Catalase-Carbonic anhydrase] in the Form of a Solution or In the Lyophilized Form During Storage at -80°C, 4°C, 25°C and 37°C or Pasteurization at 70°C (Y Bian, C Guo and TMS Chang)

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- Prevention of Methemoglobin Formation in Artificial Red Cells (Hemoglobin-Vesicles) (*H Sakai and M Yamada*) Carbon Monoxide-Bound Hemoglobin- Vesicles: Current Facts and Potential Medical Applications (*K Taguchi, K Matsumoto, H* Sakai, T Maruyama and M Otagiri)
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- OxyVita® Hb: A Step Forward in Delivering Oxygen Carrying Capacity for Therapeutic Applications (H Wollocko, JHarrington, JS Jahr, K Steier and J Wollocko)
- Functionality of Albumin-Derived Perfluorocarbon-Based Artificial Oxygen Carriers in the Langendorff Heart (KB Ferenz and M Kirsch)
- Nanobiotherapeutics as Preservation Fluids for Organs and Cells (TMS Chang, W Jiang, F D'Agnillo and S Razack)

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 - Megakaryocytes and Platelets from Novel Human Adipose Tissue-Derived Mesenchymal Stem Cells: Development of Cell-based Regenerative Medicine (Y Ono-Uruga, K Tozawa, Y Ikeda and Y Matsubara)