

RSR-13: Enhancing the Therapeutic Value of Hemoglobin-based Oxygen Carriers and Therapeutic Gasses

Blood substitutes, such as hemoglobin based oxygen carriers (HBOCs), offer promising treatments for a number of critical care conditions. However, the effective clinical use of HBOCs has been limited by oxygen-release problems as well as safety risks associated with increased vasoconstriction due to the scavenging of endogenously produced nitric oxide (NO) by HBOCs. RSR-13 and its analogues have been studied as allosteric modifiers of hemoglobin and proposed as a therapeutic aimed at increasing tissue oxygenation by shifting the P50 of native hemoglobin to the right thus releasing more oxygen to tissues in a variety of disease states.

The technology

This technology describes new uses of RSR-13 and its analogues to modulate HBOCs, nitric oxide, carbon monoxide, and other therapeutic gases. More specifically, this technology involves the use of RSR-13 to lower P50 in order to improve oxygen release and tissue delivery from HBOCs, to prevent vasoconstriction and increased blood pressure associated with the use of HBOCs, as well as to modulate the release of carbon monoxide from HBOCs to reduce ischemic damage. RSR-13 may also be used therapeutically to enhance the bioavailability of therapeutic gases such as NO and CO. Taken together, these new uses of RSR-13 provide a means to mitigate the complications associated with HBOCs and to therapeutically enhance the value of medicinal gases delivered through a variety of means.

Benefits

- » Enhanced oxygen release from HBOCs
- » Increased bioavailability of therapeutic gases
- » Safe and effective in preclinical and early clinical trials
- » Decreased risk of vasoconstriction, associated with HBOCs

Applications

- » Critical illness and injury
- » Use with HBOCs to enhance oxygen
- » Modulation of nitric oxide, carbon monoxide, and other therapeutic gas delivery
- » Ischemia/Hypoxia
- » Vasoconstriction

Patent status:

Patent issued: U.S. rights are available.
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License status:

This technology is available for licensing to industry for further development and commercialization.

Category:

Biomedical

VCU Tech #:

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Investigators:

[Martin Safo, Ph.D.](#)

Contact us about this technology

Magdalena K. Morgan, Ph.D.
Director of Licensing
mkmorgan@vcu.edu
(804) 827-6095