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Designer natriuretic peptides for heart failure: advanced in clinical development

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Background

The increasing burden of heart failure (HF) is a major unmet need for new therapeutics. No new drug has been approved for HF for over a decade. The natriuretic peptides as endogenous activators of particulate guanylyl cyclase (GC) receptors represent an unparalleled opportunity for novel therapeutic agents for HF. Specifically, the GC-A receptor activated by ANP and BNP and GC-B activation by CNP mediate beneficial pleiotropic actions, which include natriuresis, vasodilatation, suppression of the renin-angiotensin-aldosterone system, inhibition of cardiomyocyte hypertrophy, retardation of fibrosis and improvement in ventricular function and structure.

Results

CD-NP (Cenderitide) represents the first in class designer natriuretic peptide which co-activates both GC-A and GC-B. Through rational drug design to co-activate GC-A and GC-B together with increased resistance to peptidase degradation, CD-NP possesses actions which make CD-NP an innovative protein therapeutic to target the heart, kidney, vasculature and endocrine system in HF to reduce rehospitalization following acute decompensated HF.

Conclusion

Here we review the biology, preclinical development and recent human studies advancing CD-NP as a chronic peptide therapeutic designer peptide to reduce the risk of rehospitalization in human chronic HF.

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