

# Product data sheet



MedKoo Cat#: 526873 Name: Cardiogenol C HCl CAS#: 1049741-55-0 (HCl) Chemical Formula: C <sub>13</sub> H <sub>17</sub> ClN <sub>4</sub> O <sub>2</sub> Molecular Weight: 296.755	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

## 1. Product description:

Cardiogenol C is a diaminopyrimidine compound that induces the differentiation of MHC- (myosin heavy chain) positive cardiomyocytes from embryonic stem cells with an EC<sub>50</sub> value of 0.1 μM. Cardiogenol C upregulates cardiac markers and induces cardiac functional properties in lineage-committed progenitor cells. Cardiogenol C can induce Mouse Hair Bulge Progenitor Cells to Transdifferentiate into Cardiomyocyte-like Cells.

## 2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

## 3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	59	198.82

## 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.37 mL	16.85 mL	33.70 mL
5 mM	0.67 mL	3.37 mL	6.74 mL
10 mM	0.34 mL	1.68 mL	3.37 mL
50 mM	0.07 mL	0.34 mL	0.67 mL

## 5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

## 6. Recommended literature which reported protocols for in vitro and in vivo study

### In vitro study

1. Yau WW, Tang MK, Chen E, Yaoyao, Wong IW, Lee HS, Lee KKh. Cardiogenol C can induce Mouse Hair Bulge Progenitor Cells to Transdifferentiate into Cardiomyocyte-like Cells. *Proteome Sci.* 2011 Jan 19;9(1):3. doi: 10.1186/1477-5956-9-3. PMID: 21247432; PMCID: PMC3033794.

2. Mike AK, Koenig X, Koley M, Heher P, Wahl G, Rubi L, Schnürch M, Mihovilovic MD, Weitzer G, Hilber K. Small molecule cardiogenol C upregulates cardiac markers and induces cardiac functional properties in lineage-committed progenitor cells. *Cell Physiol Biochem.* 2014;33(1):205-21. doi: 10.1159/000356663. Epub 2014 Jan 24. PMID: 24481283; PMCID: PMC4389081.

### In vivo study

TBD

## 7. Bioactivity

### Biological target:

Cardiogenol C hydrochloride is a potent cell-permeable pyrimidine inducer which prompts the differentiation of ESCs into cardiomyocytes (EC<sub>50</sub>=100 nM).

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## In vitro activity

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The cardiomyogenic potential of HBPCs was investigated using a small cell-permeable molecule called Cardiogenol C. It was established that Cardiogenol C could induce HBPCs to express transcription factors GATA4, Nkx2.5 and Tbx5, which are early specific markers for pre-cardiomyogenic cells. In prolonged cultures, the Cardiogenol C-treated HBPCs can also express muscle proteins, cardiac-specific troponin I and sarcomeric myosin heavy chain. However, it was not observed that the ability of these cells to functionally contract. Hence, these cells were called cardiomyocyte-like cells rather than cardiomyocytes. It was attempted to remedy this deficiency by pre-treating HBPCs with Valproic acid first before exposing them to Cardiogenol C. This pretreatment inhibited, rather than improved, the effectiveness of Cardiogenol C in reprogramming the HBPCs. Comparative proteomics were used to determine how Cardiogenol C worked by identifying proteins that were differentially expressed. It was identified that proteins that were involved in promoting cell differentiation, cardiomyocyte development and for the normal function of striated muscles. From those differentially expressed proteins, it was further proposed that Cardiogenol C might exert its effect by activating the Wnt signaling pathway through the suppression of Kremen1. In addition, by up-regulating the expression of chromatin remodeling proteins, SIK1 and Smarce1 would initiate cardiac differentiation.

Reference: Cells. Proteome Sci. 2011 Jan 19;9(1):3. <https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/21247432/>

## In vivo activity

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TBD

*Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.*