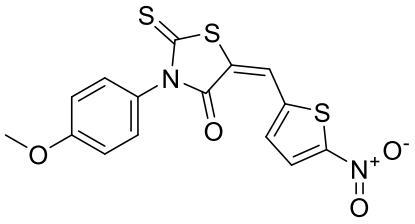
# Product data sheet

| | |
|---|---|
| MedKoo Cat#: 407472<br>Name: CCF-642<br>CAS#: 346640-08-2<br>Chemical Formula: $C_{15}H_{10}N_2O_4S_3$<br>Exact Mass: 377.9803<br>Molecular Weight: 378.44 |  |
| 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:**
CCF-642 is a protein disulfide isomerase (PDI) inhibitor. CCF642 exhibited a submicromolar IC50 in 10 of 10 multiple myeloma cell lines. In vitro, CCF642 inhibited PDI reductase activity about 100-fold more potently than the structurally distinct established inhibitors PACMA 31 and LOC14. CCF642 displayed potent efficacy in an aggressive syngeneic mouse model of multiple myeloma and prolonged the lifespan of C57BL/KaLwRij mice engrafted with 5TGM1-luc myeloma, an effect comparable to the first-line multiple myeloma therapeutic bortezomib.

**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 | 14.40 | 38.05 |

**4. Stock solution preparation table:**

| Concentration / Solvent Volume / Mass | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 2.64 mL | 13.21 mL | 26.42 mL |
| 5 mM | 0.53 mL | 2.64 mL | 5.28 mL |
| 10 mM | 0.26 mL | 1.32 mL | 2.64 mL |
| 50 mM | 0.05 mL | 0.26 mL | 0.53 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. Gao X, Wang Y, Lu F, Chen X, Yang D, Cao Y, Zhang W, Chen J, Zheng L, Wang G, Fu M, Ma L, Song Y, Zhan Q. Extracellular vesicles derived from oesophageal cancer containing P4HB promote muscle wasting via regulating PHGDH/Bcl-2/caspase-3 pathway. J Extracell Vesicles. 2021 Mar;10(5):e12060. doi: 10.1002/jev2.12060. Epub 2021 Mar 10. PMID: 33732415; PMCID: PMC7944388.
1. Vatolin S, Phillips JG, Jha BK, Govindgari S, Hu J, Grabowski D, Parker Y, Lindner DJ, Zhong F, Distelhorst CW, Smith MR, Cotta C, Xu Y, Chilakala S, Kuang RR, Tall S, Reu FJ. Novel Protein Disulfide Isomerase Inhibitor with Anticancer Activity in Multiple Myeloma. Cancer Res. 2016 Jun 1;76(11):3340-50. doi: 10.1158/0008-5472.CAN-15-3099. Epub 2016 Apr 6. PMID: 27197150.

In vivo study

1. Gao X, Wang Y, Lu F, Chen X, Yang D, Cao Y, Zhang W, Chen J, Zheng L, Wang G, Fu M, Ma L, Song Y, Zhan Q. Extracellular vesicles derived from oesophageal cancer containing P4HB promote muscle wasting via regulating PHGDH/Bcl-2/caspase-3 pathway. J Extracell Vesicles. 2021 Mar;10(5):e12060. doi: 10.1002/jev2.12060. Epub 2021 Mar 10. PMID: 33732415; PMCID: PMC7944388.

# Product data sheet

**7. Bioactivity**

Biological target:

CCF642 is a potent protein disulfide isomerases (PDI) inhibitor with an IC50 of 2.9 μM.

In vitro activity

C2C12 myoblasts were treated with CCF642, a novel specific small molecule inhibitor of protein disulfide isomerase (Vatolin et al., 2016). Apoptotic assay results indicated that the percentage of cisplatin‐induced apoptotic cells decreased in a dose‐dependent manner treated with CCF642. After concomitant incubation with 35 μM cisplatin for 24 h, the total apoptotic percentages of apoptotic cells in C2C12 myoblasts treated with 0.1% DMSO (vehicle control) reached 38.67%. Treatment of 3 μM CCF642 significantly reduced apoptotic rates to 5.17%. With the increase of drug concentration to 5 μM, the percentage of apoptotic cells dropped to 1.73% (Figure 6, a and b, $P < 0.0001$). The similar tendency was also observed in L6 rat myoblasts after treatment with CCF642 (Fig. S9, $P = 0.0013$ when CCF642 concentration is 3 μM; $P = 0.001$ when CCF642 concentration is 5 μM). These results indicated that CCF642 showed antiapoptotic effects on cisplatin‐induced C2C12 myoblasts. Furthermore, in differentiated C2C12 myotubes induced by cisplatin, treatment with CCF642 increased myotube diameter, elevated expression level of MHC and decreased levels of MURF1 and LC3 (Fig. S10A‐C).

Reference: J Extracell Vesicles. 2021 Mar; 10(5): e12060. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7944388/

In vivo activity

The YES2 model of ESCC‐associated cachexia was used to test the effect of CCF642 on prevention of muscle wasting in vivo. YES2 cells were subcutaneously implanted into nude mice. Ten days later, when tumour volume reached to 50 mm3, CCF642 (10 mg/kg) or albumin vehicle concomitant with cisplatin (5 mg/kg) were intraperitoneally (i.p.) administrated into nude mice. The treatment was three times a week for 4 weeks. Administration of CCF642 prevented body weight loss (Figure 6d, $P = 0.003$). However, CCF642 treatment did not result in changes in tumour volume during the experimental period (Figure 6e). CCF642 treatment also prevented cachectic muscle wasting (Figure 6, f and g, $P = 0.0002$), increased MHC protein level and downregulated the protein levels of MURF1 and LC3 in GA muscle as compared to albumin vehicle (Figure 6h). Moreover, adipocyte triglyceride (TG) content in eWAT was higher in response to CCF642 treatment with cisplatin than albumin with cisplatin (Fig. S10D). Histopathological analysis of eWAT revealed that CCF642 treatment prevented adipose tissues wasting (Fig. S10E). In addition, CCF642 treatment could prevent inflammation events (Fig. S10F‐I). Furthermore, body weight, GA muscle weight, tumour volume and H&E analysis supplemented with the pair‐fed group and CCF642 treatment alone group were compared. It was proved that CCF642 had no apparent toxicity (Fig. S11). In vivo results show that CCF642 is a promising drug candidate for cachexia treatment in ESCC.

Reference: J Extracell Vesicles. 2021 Mar; 10(5): e12060. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7944388/

*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.*