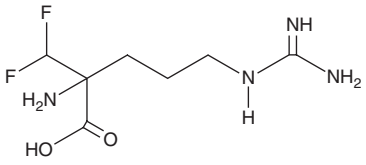
PRODUCT INFORMATION

α-(difluoromethyl)-DL-Arginine

Item No. 16415

CAS Registry No.:	69955-43-7
Formal Name:	2-(difluoromethyl)-arginine
Synonyms:	DFMA, RMI 71897
MF:	$C_7H_{14}F_2N_4O_2$
FW:	224.2
Purity:	≥95%
UV/Vis.:	λ_{max}: 202 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

α-(difluoromethyl)-DL-Arginine (DFMA) is supplied as a crystalline solid. Aqueous solutions of DFMA can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of DFMA in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Bacteria synthesize the cellular growth factor putrescine through a number of pathways. One pathway involves the decarboxylation of arginine by arginine decarboxylase to produce agmatine, which is then degraded to putrescine. While important for various cellular processes (*e.g.*, cell division, differentiation, environmental stress responses) in all living organisms, including plants, high levels of this polyamine can be toxic.[1] DFMA is an enzyme-activated, irreversible inhibitor of the arginine decarboxylases of *E. coli* (K_i = 800 µM), *P. aeruginosa*, and *K. pneumoniae*.[2] At 0.01 mM, it has been shown to prevent the osmotic stress-induced increase in arginine decarboxylase activity and putrescine synthesis in oat leaf cells.[3,4] DFMA can also reduce the growth of *T. cruzi* in mammalian host cells at a minimal concentration of 10 mM and prevent the growth of *C. parvum* in a T cell receptor alpha-deficient mouse model when combined with various polyamine analogs.[5,6]

References

1. Gill, S.S. and Tuteja, N. Polyamines and abiotic stress tolerance in plants. *Plant Signal. Behav.* **5(1)**, 26-33 (2010).
2. Kallio, A., McCann, P.P., and Bey, P. DL-α-(Difluoromethyl)arginine: A potent enzyme-activated irreversible inhibitor of bacterial decarboxylases. *Biochemistry* **20(11)**, 3163-3168 (1981).
3. Tiburcio, A.F., Kaur-Sawhney, R., and Galston, A.W. Polyamine metabolism and osmotic stress. II. Improvement of oat protoplasts by an inhibitor of arginine decarboxylase. *Plant Physiol.* **82(2)**, 375-378 (1986).
4. Flores, H.E. and Galston, A.W. Polyamines and plant stress: Activation of putrescine biosynthesis by osmotic shock. *Science* **217(4566)**, 1259-1261 (1982).
5. Kierszenbaum, F., Wirth, J.J., McCann, P.P., *et al.* Arginine decarboxylase inhibitors reduce the capacity of *Trypanosoma cruzi* to infect and multiply in mammalian host cells. *Proc. Natl. Acad. Sci. USA* **84(12)**, 4278-4282 (1987).
6. Yarlett, N., Waters, W.R., Harp, J.A., *et al.* Activities of DL-α-difluoromethylarginine and polyamine analogues against *Cryptosporidium parvum* infection in a T-cell receptor alpha-deficient mouse model. *Antimicrob. Agents Chemother.* **51(4)**, 1234-1239 (2007).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM