



Supplementary Materials

L-Lysine α -Oxidase: Enzyme with Anticancer Properties

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Table S1. Sensitive models to various of L-amino acid oxidases.

Sources of LAAO	Name of LAAO	Cell type	IC ₅₀ , mg/ml	Reference
Amanita phalloides	Ap-LAAO	Jurkat	ND	[15]
Clitocybe geotropa	Cg-LAAO	MCF7	ND	
Ophiophagus hannah	OH-LAAO	PC-3	5×10 ⁻⁵	[51]
		B16F10	1,7×10 ⁻⁴	[66]
		HT-1080	6×10 ⁻⁴	
Cryptelytrops purpureomaculatus	CP-LAAO	SW480	2,9×10 ⁻²	[54]
		SW620	2,3×10 ⁻²	
		CCD-18co	1,5×10 ⁻²	
Lachesis muta	Lm-LAAO	MCF7	1,4×10 ⁻³	[57]
		AGS	22,7×10 ⁻³	
Bungarus fasciatus	BF-LAAO	A549	1,2×10 ⁻³	[58]
Bothrops leucurus	Bl-LAAO	LL 24	ND	[59]
		MKN-45		
		HUTU		
		RKO		
Agkistrodon acutus	ACTX-6	A549	2×10 ⁻²	[64]
	ACTX-8	HeLa	ND	
Bothrops atrox	Batrox-LAAO	HL-60	5×10 ⁻²	[65]
		B16F10	2,5×10 ⁻²	
		PC12	ND	
		Jurkat	ND	

ND—not determined.

Table S2. Results of clinical trials of amino acid degrading enzymes.

Enzyme	Indications	Results of clinical data	References
L-Asparaginase	Acute Lympho- blastic Leukemia	5-year survival rate 83%	[84-86]
		Side Effects:	
		- Allergic reaction 15%	
	- Pancreatitis 7%		
- Coagulopathy 4.5%			
	T/NK-cell lym- phoma	5-year survival rate 55.6%	[94]
		Side Effects:	
		- Leukopenia 22.2%	
	- Pancreatitis 5.6%		
- Hyperglycemia 22.2%			
- Allergic reaction 5.6%			
PEG Asparagi- nase	Acute Lympho- blastic Leukemia	5-year survival rate 90.8%	[87]
		Side Effects:	
		- Hypersensitivity 1.5%	
- Osteonecrosis 3.5%			
- Pancreatitis 2.8%			
Asparaginase Encapsulated in Erythrocytes	Acute Lympho- blastic Leukemia	2-year overall survival 35.7%	[88]
		Complete remission 70%	
		Side Effects:	
	- Hyperbilirubinemia 20.7%		
- Deep vein thrombosis 7%			
	Pancreatic Cancer	*6-month progression-free survival 20.4%	[89]

		*6-month overall survival 53.3%	
		*Side effects:	
		- Physical health deterioration 12.9%	
		- Neutropenia 12.9%	
		- Anemia 8.6%	
		Side effects:	
		- Immunogenicity 83.3%	
		- Gastrointestinal disorders 37.9%	[90]
		- General disorders 18.2%	
PEG-Arginase	Melanoma Prostate Adenocarcinoma	Complete remission >30 months	
		Side effects:	
		- Nausea	[95]
		- Skin rash	
		- Diarrhea	
	Hepatocellular Carcinoma	Overall survival (23.7 weeks) 91.3%	
		Progression-free survival (6 weeks) 95.7%	
		Side effects:	
		- Fatigue 59.3%	[96]
		- Oedema 25.9%	
		- Anemia 7.4%	
		- Hyponatremia 11.1%	
Pegylated Arginine Deiminase (ADI-PEG-20)	Melanoma	6-month progression-free survival (ASS negative) 60%	
		Side effects:	
		- Allergic reaction 2.5%	[97]
		- Thrombocytopenia 2.5%	
		- Neutropenia 7.6%	
		- Anemia 2.5%	
	Acute Myeloid Leukemia	6-month progression-free survival 30%	
		Side effects:	
		- Skin rash 9.3%	[98]
		- Hyperuricemia 7%	
		- Leukopenia 7%	
		- Anemia 4.7%	

* combined chemotherapy with gemcitabine.