Field information about dbACP

Field Name	Description
Peptide Name	Name of anticancer peptide.
Source/Organism	The origin or source organism of the peptide.
Linear/Cyclic	Specifies whether the peptide is linear or cyclic in structure.
Chirality	Indicates the stereochemistry of the peptide's amino acids (D or L conformation).
Sequence	The amino acid sequence of the peptide.
C-terminal modification	Describes any chemical modifications present at the C-terminus of the peptide.
N-terminal modification	Details any chemical modifications present at the N-terminus of the peptide.
Assay type	The type of assay or method used to determine the peptide's biological activity.
Assay time	The duration for which the peptide was tested in the assay.
Activity	The biological activity of the peptide, such as its effective concentration (e.g., LC50).
Mechanism of action	Describes the biological mechanism through which the peptide exerts its activity.
Cell line	The specific cell line on which the peptide's activity was tested.
Cancer type	The type of cancer targeted by the peptide during testing.
Other activity	Additional biological activities displayed by the peptide (e.g., antibacterial, antifungal).
PDB file format	A link to download the peptide structure in PDB format.
Peptide ADMET properties	A downloadable file or reference provides information on the peptide's Absorption, Distribution, Metabolism, Excretion, and Toxicity (ADMET) properties.
Peptide molecular descriptors	A downloadable file, provides the peptide's quantitative structure-activity relationship (QSAR) descriptors.
Pubmed ID	The PubMed ID (PMID) for the scientific publication that describes the peptide's properties and activities.
Amino acid percentages	It shows the percentage of each amino acid in the peptide sequence.
Amino acid count	A count of each amino acid within the peptide sequence.
Missing amino acid	Amino acids that are absent from the peptide sequence.
Most occurring amino acid	The amino acid that appears most frequently in the peptide sequence.
Most occurring amino acid frequency	The number of times the most occurring amino acid appears in the sequence.
Least occurring amino acid	The amino acid that appears least frequently in the peptide sequence.
Least occurring amino acid frequency	The frequency of the least occurring amino acid in the sequence.

Hydrophobic/Hydrophilic amino acid ratio	The ratio of hydrophobic to hydrophilic amino acids in the peptide sequence.
Molecular mass	The calculated molecular mass of the peptide.
Aliphatic index	A measure of the relative volume occupied by aliphatic side chains (alanine, valine, isoleucine, and leucine) in the peptide sequence.
Instability index	A computed value that estimates the stability of the peptide in a test tube environment.
Hydrophobicity (GRAVY)	The Grand Average of Hydropathy (GRAVY) score indicates the overall hydrophobicity of the peptide.
Isoelectric point	The pH at which the peptide carries no net electrical charge.
Hydrophobic moment	A measure of the hydrophobic character of the peptide sequence.
Charge (pH : 7)	The net charge of the peptide at a neutral pH of 7.
Aromaticity	The relative frequency of aromatic amino acids (phenylalanine, tyrosine, tryptophan) in the peptide sequence.
Molar extinction coefficient (cysteine, cystine)	The molar extinction coefficients of the peptide considering the presence of cysteine and cystine residues.
Secondary Structure fraction (Helix, Turn, Sheet)	The estimated fraction of the peptide's secondary structure elements such as helix, turn, and sheet.
Smiles Notation	A simplified molecular input line entry system (SMILES) representation of the peptide.

Abbreviations

sp. – Species

D amino acid - Dextrorotary

L amino acid - Levorotary

IC50 - Half-maximal inhibitory concentration

MIC- Minimum inhibitory concentration

LD50 - Lethal dose 50| Median lethal dose

LC50 - Lethal concentration 50

IC50± SD - Half-maximal inhibitory concentration± Standard deviation

EC50 - Half maximal effective concentration

CC50 - Cytotoxic concentration 50%

Kd - Dissociation constant

ED50 - Median effective dose

ID50 - Median infective dose

MTT assay - 3-(4,5-dimethylthiazolyl-2)-2,5-diphenyltetrazolium bromide assay

MTS assay - dimethylthiazol-carboxymethoxyphenyl-sulfophenyl-tetrazolium assay

WST-1 assay - Water-soluble tetrazolium salt assay

LDH leakage assay - Lactate dehydrogenase leakage assay

CCK-8 assay - Cell Counting Kit-8 assay

TUNEL assay - Terminal deoxynucleotidyl transferase dUTP nick-end labelling assay

PES colorimetric assay - Intermediate electron acceptor pheazine ethyl sylfate (PES) colorimetric assay

SDS-PAGE assay - Sodium dodecyl sulfate–polyacrylamide gel electrophoresis

Cnf assay - Cell nucleus fragmentation assay

SRB assay - Sulforhodamine B assay

ELISPOT assay - Enzyme-linked immunosorbent spot assay

XTT assay - Methoxynitrosulfophenyl-tetrazolium carboxanilide assay

PI-uptake assay - Propidium Iodide Uptake Assay

PMS assay - Phenazine methosulfate assay

GFP assay - Green Fluorescent Protein based assay

EIA - Enzyme Immunoassay

GST Pull-down assay - Glutathione S-Transferase Pull Down assay

PKA Kinase assay - cAMP-dependent protein kinase A assay

GST Competition assay - Glutathione S-Transferase Competition assay

FAQs (Frequently Asked Questions)

What is dbACP?

dbACP is a manually curated repository of experimentally validated anticancer peptides.

What are anticancer peptides?

Anticancer peptides are amphipathic and mainly cationic, often originating from antimicrobial peptides. They specifically target and kill cancer cells due to the differences between the cell membranes of healthy and cancerous cells. The suggested mechanisms by which they work involve disrupting the cytoplasmic membrane through micelle formation or pore creation or triggering apoptosis.

Why is dbACP created?

In the last decade, small peptides having anticancer properties have emerged as a potential alternative approach for cancer therapy. Peptide-based therapy has numerous advantages over small molecules that involve high specificity, low production cost, high tumor penetration, ease of synthesis and modification, etc. Anticancer peptides benefit from the current anticancer therapies in being more selective, specific, and unaffected by common resistance mechanisms. Considering their therapeutic importance, we have tried to catalog all the updated information on these peptides from the literature.

What is unique about dbACP?

dbACP is a unique database that provides comprehensive information about anticancer peptides and targeted cell lines. It has many online tools. Also, the dbACP database provides 3D structures of anticancer peptides.

Does this database represent all the experimentally validated anticancer peptides in the literature?

This database is the result of the first round of curation, and the literature is being continuously searched for more studies to provide an exhaustive repository.

Why search dbACP?

dbACP provides all the experimentally validated information about anticancer peptides and proteins such as anticancer activity, nature of peptide, the source of peptide, chirality, amino acid sequence, N- and C- terminal modifications, the structure of the peptide, source of peptide and targeted cell lines. This information may be very useful for researchers working on therapeutic peptides.

How do I process a text search with dbACP database?

Users can search a peptide by name, sequence, assay type, anticancer activity, cell line, PMID, etc.

To whom can I report a discrepancy?

Please refer to the "Contact" page, where users can directly contact developers.