OTAVA chemicals

Compounds for HTS
Chemical building blocks
Fragment libraries
Targeted libraries
Drug discovery services

NICOTINIC ACETYLCHOLINE RECEPTOR TARGETED LIBRARY

OTAVA chemicals

OTAVA offers Nicotinic Acetylcholine Receptor Targeted Library. It is a special screening collection containing compounds with predicted activity against nAChR which is one of the major target for insecticide action. This library provides an excellent basis for insecticide discovery projects.

The library consists of **535 compounds***.

All compounds are:

- **in stock**; available amounts: 1 – 50 mg

QA/QC passed:

- minimal purity of compounds is **90%**;
- by **NMR** and/or **GC/LC/MS**
- **NMR spectra are available** upon request

Frendly packing services:

- **Cherry-picking is available**
- Supplied as dry powder or DMSO solution**
- Packaging in deep-well plates or barcoded vials***
- **Weighing out is free**

*Please note that the library does not contain known inhibitors. The compounds were selected with computational approach and are intended for screening projects

**there is additional fee for preparation of the solution

***4 ml amber glass vials or Deep-well plates: Matrix cat# 4247 (1.4 mL, Blank, Polypropylene, Round Bottom Tubes) w/CapMats. Or plates and vials provided by customer.

Target engagement:

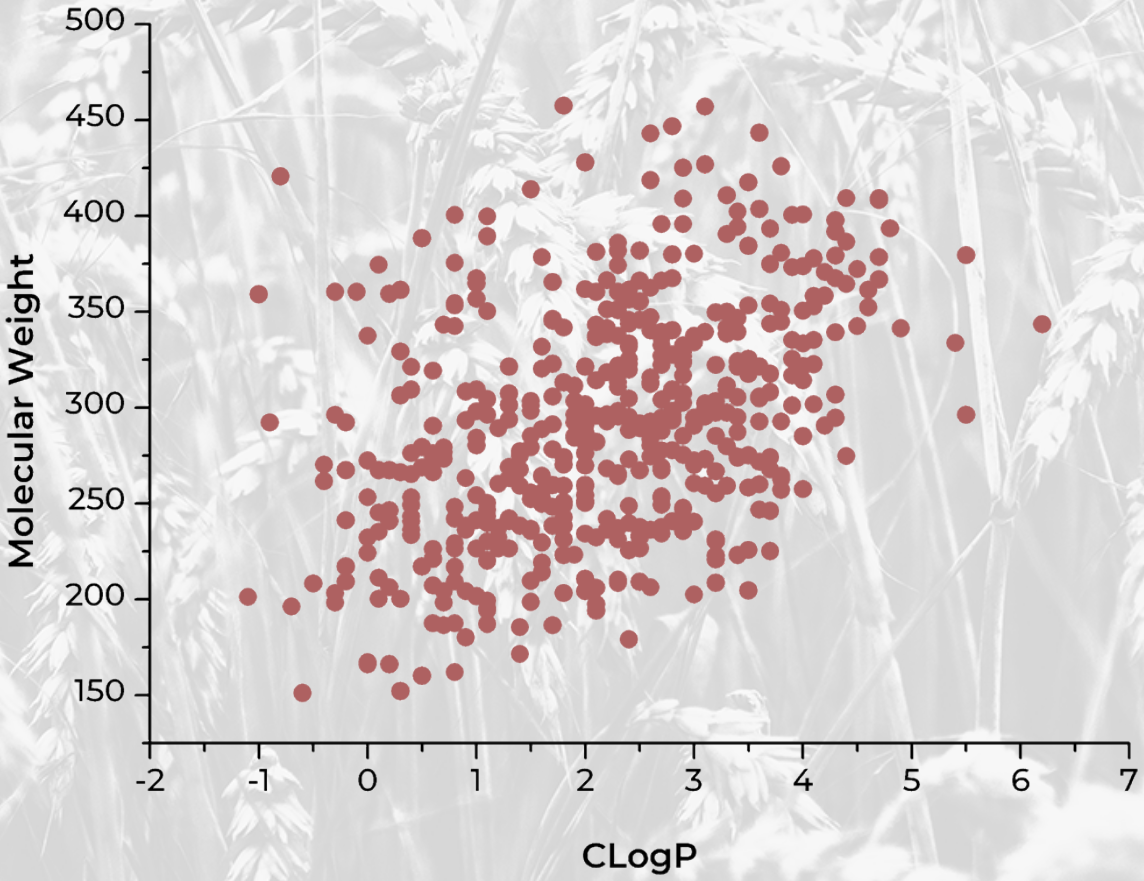
The **nicotinic acetylcholine receptor** (**nAChR**) is a neurotransmitter-regulated ion channel complex that is responsible for rapid synaptic transmission. In central nervous system of insect, the nAChR plays a major role and is an important target for insecticide action.

Therefore, **nAChR** inhibitors can be used for the development of new insecticides.

The summary of the library characteristics:

	Minimum	Maximum	Average value
Molecular Weight	151.2	457.5	294.3
Number of Hydrogen Bond Donors	0	3	0.7
Number of Hydrogen Bond Aceptors	1	8	4.2
Number of Rotatable Bonds	0	9	3.4
CLogP	-1.1	6.2	2.2
Number of Rings	1	5	2.3
Polar Surface Area	12	172.3	85.9

Distribution of physicochemical properties of compounds in the library:



Design speciality:

Cross modeling includes Bayesian and pharmacophore approaches was used for design of this special screening library containing predicted insecticides targeted nicotinic acetylcholine receptor.

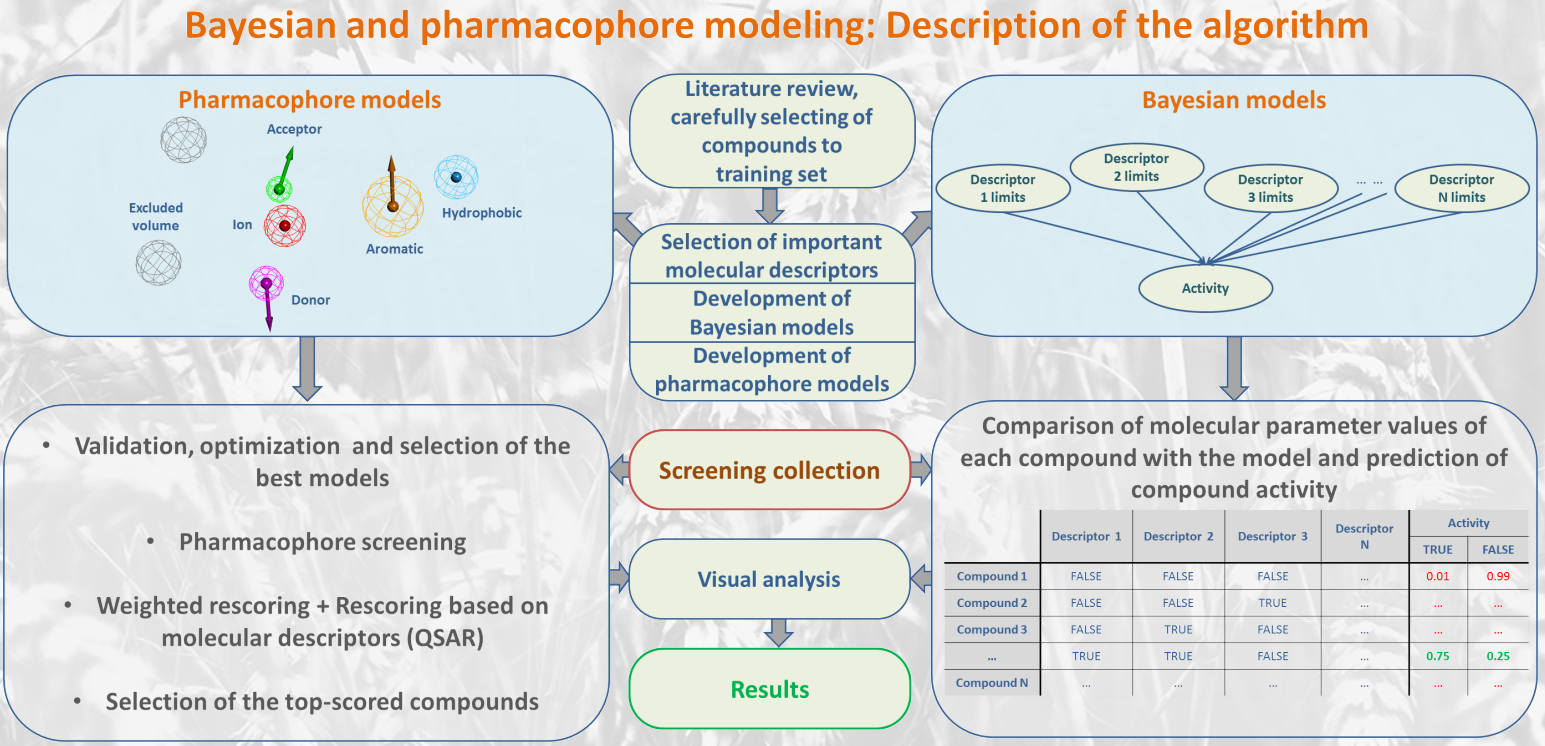
Known insecticides with mechanism of action on nAChR were clustered into five training sets which have been used for modeling. The ligand-based pharmacophore models with different pharmacophore features and excluded volumes were developed, optimized and validated using the training sets. OTAVA Screening Collection was screened against the best optimized pharmacophore models (from three to five models for each training set). Obtained results were rescored using two special rescoring functions (first was based on pharmacophore feature weights and second was based on molecular descriptors (QSAR)).

Also Bayesian models were constructed for the same training sets based on fingerprints (ECFP4, ECFP6, FCFP4, FCFP6) and different molecular descriptors (LogP, molecular weight, number of hydrogen acceptors and donors, number of rotatable bonds, number of rings and molecular PSA). OTAVA Screening Collection was screened against them.

Top-scored compounds selected from pharmacophore modeling were crossed with top-scored compounds selected from Bayesian modeling. Only compounds selected by both methods were visually analyzed and taken to library.

The combination of these methods should allow increasing the number of active compounds identified during screening.

Scheme 1. Bayesian and pharmacophore modeling: Description of the algorithm



OTAVA chemicals

Custom synthesis

Molecular modeling

Amyloids detection

Contract research

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