Hands-on exercises to the lecture „Modern Methods in Drug Discovery“ WS16/17

10.11.16

1. Compile a list of as many as possible ACE inhibitors. Start looking up captopril in Wikipedia. This will lead you to links to ChEMBL and PubChem:

a) in the captopril entry of PubChem: retrieve further Angiotension-Converting Enzyme Inhibitors (section Pharmacological Action)

b) in the captopril entry of ChEMBL:
How many IC50 values are available for captopril?
What is the ChEMBL entry number for the target „Angiotensin-converting enzyme“ of homo sapiens?

2. Go to the starting page of ChEMBL. What is the IC50 value (in nM) of moexipril for the inhibition of the human Angiotensin-converting enzyme?
What is this concentration in mol/litre?
For comparison: Captopril has an IC50 value of 23 nM. Which of both ligands binds stronger to ACE?
For which other ACE-inhibitors were IC50 values reported in the same publication (and same CHEMBL assay ID: activate “Assay ChEMBLID” by “show columns”) as moexipril? Activate “Molecule Name” by “show columns”.
List only those which end on “pril” or “prilat”.

3. Try searching for captopril and other inhibitor names in conjunction with the keywords: „International nonproprietary names“, „WHO“, „Drug Information“, „use of stems“ in Google to get even more ACE-Inhibitors

4. Draw a common substructure for the majority of these inhibitors (exclude captopril). This substructure is similar to a class of natural compounds. Which one?

5. What is the difference between those inhibitors ending with the suffix „pril“ and those terminating with „prilat“ ?