Carbonyl Reductase (CRED) Enzyme Screening Kit

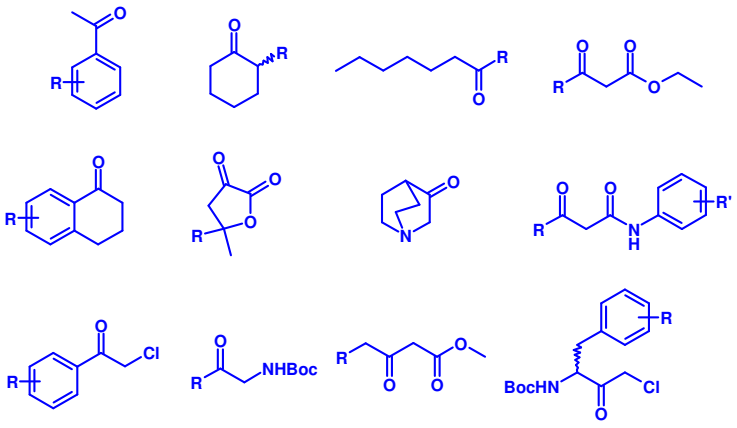
CESK-9600-HP (50 mg)

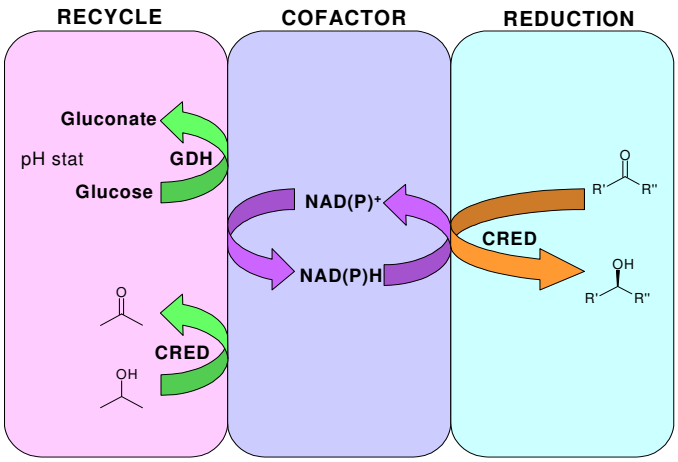
Applications

Synthesis of enantiomerically pure (*R*) or (*S*) alcohols by enzymatic reduction of carbonyl compounds.

Substrate range

A wide variety of structurally diverse carbonyl compounds, including aliphatic & aromatic ketones, diketones, ketoesters, ketoamides, ketoacids, cyclic ketones and aldehydes. A selection is shown below.





Kit description

The kit contains 96 diverse pre-formulated carbonyl reductase (CRED) biocatalysts as lyophilised powders, as well as pre-prepared phosphate buffer and a reaction mix for the cofactor recycle system. Note that for some enzymes, it is possible to recycle cofactor using a low-cost alcohol donor such as isopropyl alcohol (IPA).

CREDs contained in the screening kit:

19	44	85	106	153	184	198	208	220	A201	A471	A681
20	48	87	108	154	186	201	209	A101	A231	A501	A711
21	49	96	120	164	187	202	211	A121	A251	A521	A721
22	51	98	122	165	188	203	212	A131	A271	A531	A731
25	54	99	131	167	190	204	214	A141	A281	A551	A751
34	55	100	137	169	192	205	215	A151	A301	A561	A771
35	61	101	148	170	194	206	216	A161	A401	A601	A801
37	80	103	150	182	196	207	219	A171	A411	A641	N151

Contents

CREDs	96 vials lyophilised powder (50 mg each)
Reaction mix*	5 vials (5 x 3.4 g)
DMSO	1 bottle (50 mL)
0.1 M Phosphate buffer (pH 7)	1 bottle (250 mL)

*Once dissolved in 50 mL phosphate buffer, reaction mix contains 60 mg/mL glucose monohydrate, 2 mg/mL NAD, 2 mg/mL NADP and 4 mg/mL GDH.

Screening Procedure

1. Label 96 x 1.5 mL tubes corresponding to the different CREDs provided in the kit (listed in the table above) and add 10 mg of the corresponding enzyme.
2. Dissolve the reaction mix (1 vial) in 50 mL of phosphate buffer.**
3. Once dissolved, add 500 µL of the reaction mix solution to each tube containing 10 mg CRED.
4. Add a solution of 5-10 mg substrate in DMSO (25-50 µL, depending on solubility).
5. Shake at room temperature (or ideally 30 °C). Agitate overnight.
6. Extract product with an organic solvent (MTBE, EtOAc etc.).
7. Analyse sample by GC/HPLC to determine conversion and product ee.

**It is recommended to make the reaction mix solution fresh and use immediately. Avoid storage of the reaction mix as a solution, as this will degrade over time. An adequate supply of all components is provided for five screens. Additional GDH, buffer, glucose monohydrate or NAD/NADP can be purchased from Almac if required.

Storage: The screening kit should be stored in a refrigerator at 4 °C to preserve enzyme activity.

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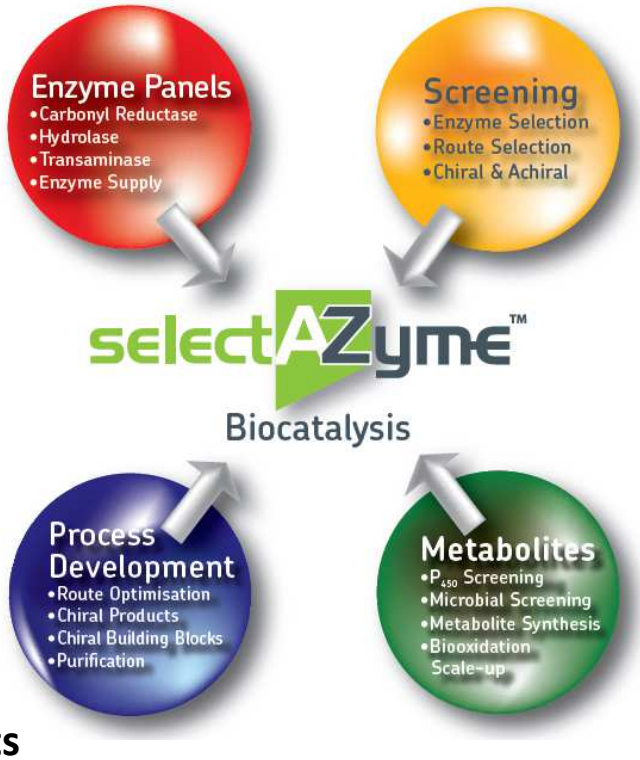
selectAZyme Offerings

- An ever-expanding biocatalysis team including molecular and microbiologists, enzymologists, bioinformaticians, organic chemists and analysts, all equipped with state-of-the art facilities.
- Expertise in gene identification, expression, fermentation and enzyme production, followed by the efficient use of enzymes to produce complex chiral APIs.
- Enzyme evolution based on computational re-design, semi-rational and random mutagenesis approaches, allowing access to bespoke biocatalysts with enhanced activity, selectivity and process robustness.
- Fully integrated biocatalyst development through screening, (chemo-) enzymatic route definition, process development and scale up (pilot plant facilities available).
- Rapid implementation of enzymatic steps in complex, multi-stage syntheses, leading to significant improvements in production yields and timelines.
- A simple business model that avoids IP issues.



The selectAZyme Range of Enzyme Screening Kits

Our unique selectAZyme platform offers a range of enzymes suitable for carrying out a wide variety of chemical reactions. Our biocatalysts are prepared in easy to use kits for rapid customer evaluation without any IP issues. These include the following:

Carbonyl Reductase (CRED) biocatalysts

>300 CREDs for the production of chiral alcohols from pro-chiral ketones

Hydrolase biocatalysts

>100 hydrolases for selective hydrolysis in aqueous media, selective acylation in non-aqueous media, resolution of secondary alcohols, amines and thiols, formation of peptides

Nitrilase biocatalysts

>200 nitrilases for the synthesis of carboxylic acids by enzymatic hydrolysis of nitriles

Transaminase (TAm) biocatalysts

>200 TAms for the production of chiral amines by asymmetric synthesis from pro-chiral ketones or resolution of racemic amines

Ene Reductase (ERED) biocatalysts

>200 EREDs for asymmetric reduction of activated alkenes

For the full range of enzyme screening kits on offer, please check the Almac website

Want Almac to do the screening for you?

- Our experienced biocatalysis team can screen all of our enzymes against your target substrate(s) and simply provide the results.
- Flexible options for subsequent enzyme supply, evolution services, process development and scale up as required.

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