Aldehyde Reductase (ARED) Enzyme Screening Kit

AESK-1600

Applications

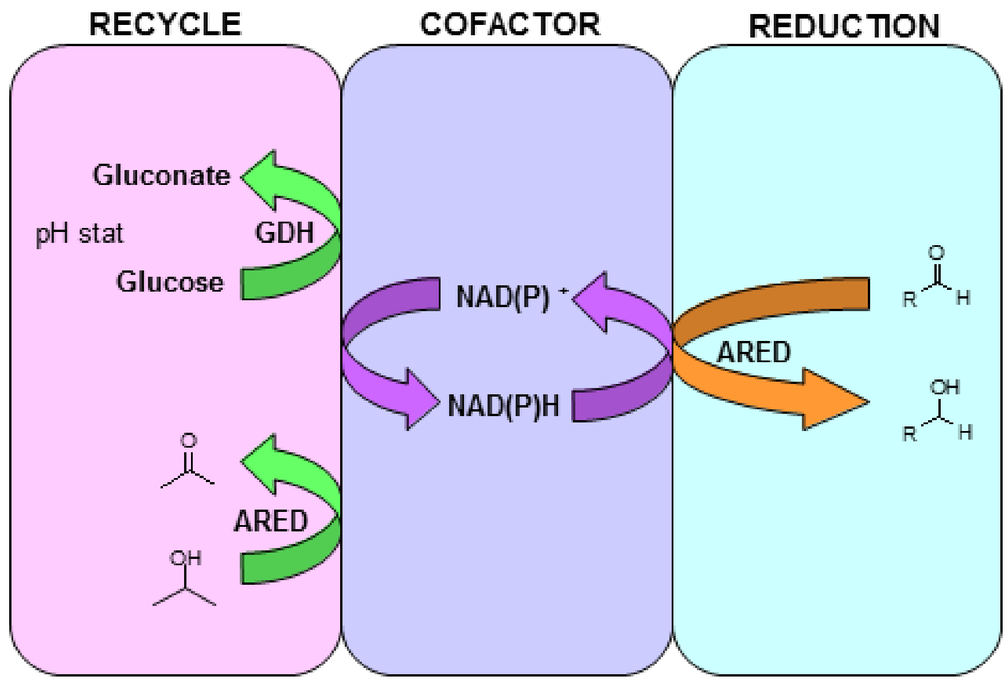
Synthesis of primary alcohols by enzymatic reduction of aldehydes. Selective reduction of an aldehyde in the presence of a ketone.

Kit description

The kit contains 16 diverse pre-formulated aldehyde reductase (ARED) biocatalysts as lyophilised powders, as well as pre-prepared phosphate buffer, NAD and NADP cofactors, DMSO, glucose and glucose dehydrogenase (GDH) 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).

ARED in kit with cofactor preference

ARED	Cofactor
AR-101	NADP
AR-102	NADP
AR-104	NADP
AR-105	NAD
AR-106	NADP
AR-107	NAD
AR-108	NAD
AR-109	NADP
AR-110	NADP
AR-111	NADP
AR-112	NADP
AR-113	NADP
AR-114	NADP
AR-115	NADP
AR-116	NADP
AR-117	NADP



Contents

AREDs	16 vials lyophilised powder (50 mg each)
NADP	1 vial (80 mg)
NAD	1 vial (80 mg)
GDH	1 vial (250 mg)
Glucose	1 vial (2.5 g)
DMSO	1 vial (10 mL)
0.1M KH_2PO_4 buffer (pH 7.0)	1 bottle (200 mL)

Screening Procedure

1. Into a flask/vial, add 1 mL ARED in buffer (15 mg/mL)
2. Add 100 µL Glucose in buffer (300 mg/mL)
3. Add 100 µL NADP or NAD (10 mg/mL), depending on enzyme preference (see cofactor preference table).
4. Add 100 µL GDH in buffer (20 mg/mL).
5. Add a solution of ~20 mg substrate in organic solvent (50-100 µL, depending on solubility) such as DMSO or MTBE.
6. Shake/stir at room temperature (or ideally 30 ºC). Agitate overnight.
7. Extract product with an organic solvent (MTBE, EtOAc etc.).
8. Analyse sample by chiral 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 NADP, GDH, glucose and buffer is provided for 5 screening reactions. Additional GDH, buffer, glucose or NAD/NADP can be purchased from Almac if required

Storage: Recommend refrigeration at 4°C to preserve enzyme activity.

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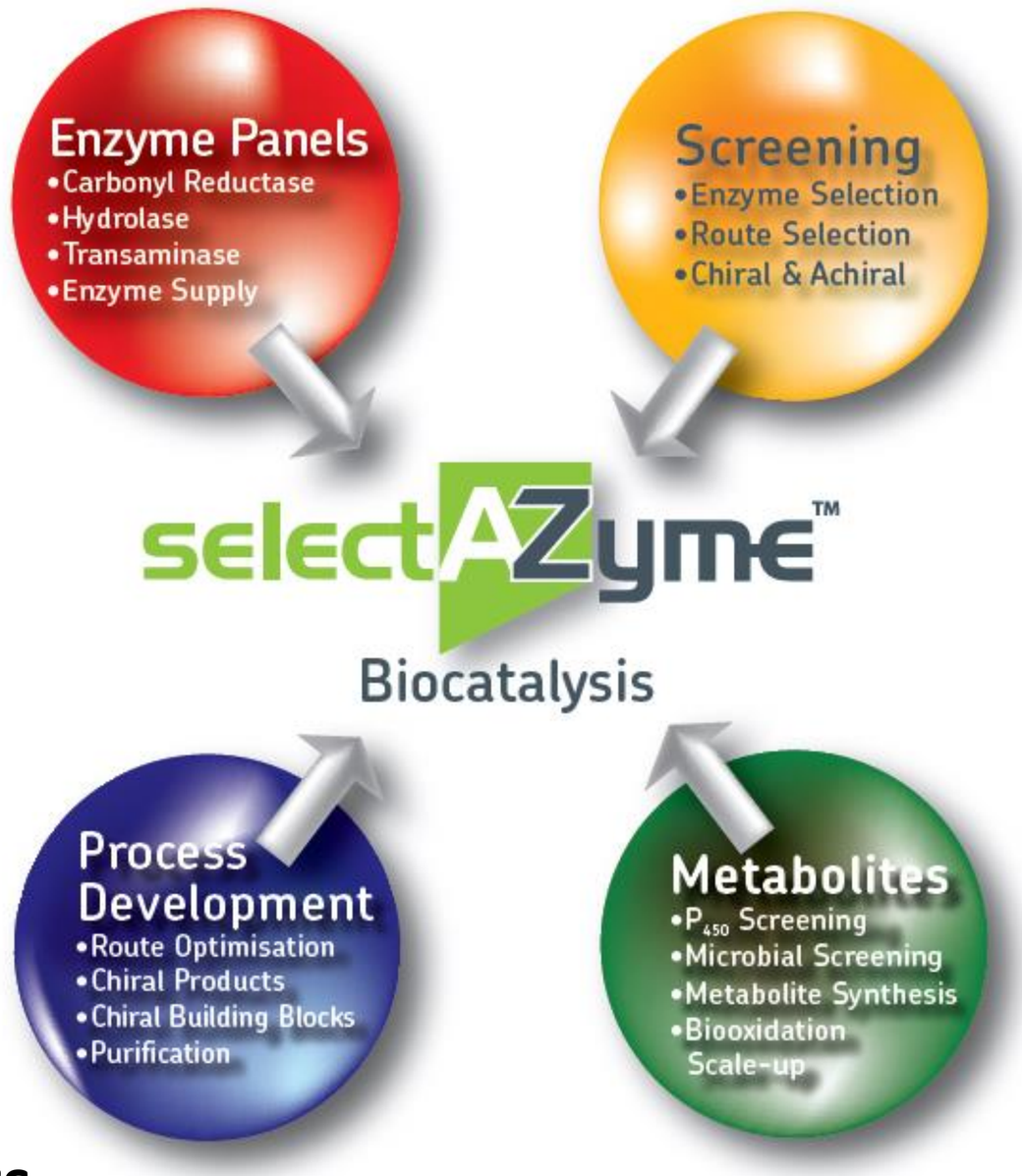
Partnering to Advance Human Health

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 selectAZmye kits include a detailed user guide and come with all buffers, cofactors, recycling systems and reagents necessary to perform screens using standard laboratory equipment.

Carbonyl Reductase (CRED) biocatalysts

96 CRED biocatalysts for the production of chiral alcohols and/or use in cofactor recycling schemes

Aldehyde Reductase (ARED) biocatalysts

16 ARED biocatalysts

Hydrolase biocatalysts

48 commercially available hydrolases for selective acylation of alcohols and amines.

Nitrilase and Nitrile Hydratase (NHase) biocatalysts

9 NHases and 15 nitrilases

Transaminase (TAm) biocatalysts

96 TAms for the prodcution of chiral amines from pro-chiral ketones.

Ene Reductase (ERED) biocatalysts

143 ERED biocatalysts for asymmetric reduction of activated alkenes

P450 Monooxygenase biocatalysts

96 P450 monooxygenase biocatalysts for a huge range of highly selective oxidations

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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