SeLENOZYME

The world's first company specialized for recombinant production of active selenoproteins

ABOUT US

Selenozyme is a unique world-wide provider of recombinant selenoproteins. We use a cutting-edge technology, resulting from over 30 years of research at Karolinska Institutet in Stockholm, Sweden. Our recombinant system allows us to produce purified and active selenoproteins. Our portfolio includes more than 25 selenoproteins, where we additionally have the capability to produce most other naturally occurring selenoproteins, or other tailored synthetic selenocysteine-containing proteins.

KEY FIGURES

1st	Company specialized for production of recombinant selenoproteins
30+	Years of research
25+	Selenoproteins in our portfolio
≥95%	Purity-levels

SELENOPROTEINS

In humans, there are 25 selenoprotein-encoding genes, which are involved in diverse metabolic and physiological functions ranging from antioxidant defense to fertility, muscle development and function, thyroid hormone metabolism, and immune function. Several selenoproteins also have major importance in cancer, both as enzymes protecting cells from carcinogenesis and as target proteins for anticancer drug therapies. Consequently, the range of pathologies associated with primary or secondary defects in selenoprotein functions are many.

PROBLEM ADDRESSED

All selenoproteins contain a rare amino acid, selenocysteine, which has limited their use in research, therapy and diagnostics. Up until now, customers have been forced to purchase either inactive selenoproteins, lacking the essential selenocysteine residue, or active selenoproteins obtained from animal sources, being expensive, ethically questionable and providing very low yields.

OUR TECHNOLOGY

Since all selenoproteins by definition contain the rare amino acid Selenocysteine (Sec), it has previously been very hard to obtain them in pure form or to produce them recombinantly, due to the complex genetic system required for co-translational Sec insertion.

After over 30 years of extensive research at Karolinska Institutet in Stockholm, led by professor Elias Arnér and his research group, the technical challenges for producing recombinant selenoproteins have been overcome.

Our recombinant production system uses bacteria instead of mammalian cells, making the production of active selenoproteins more effective and cost-efficient. Selenozyme has established a state-of-the-art protein production facility to supply our customers with selenoproteins at any desired scale and purity and at very competitive prices compared to selenoproteins purified from native sources.

OUR PRODUCTS

We are happy to engage in the production of virtually any selenoprotein on demand. In addition to our tailored production of unique selenoproteins, we have several selenoproteins currently in stock, in aliquots for rapid delivery at competitive prices and with at least 95% purity. Examples of our products include the following selenoprotein preparations.

Product name	Product Specification
Human TrxR1	More than 90% Sec contents and more than 95% purity in aliquots
Human TrxR2	More than 90% Sec contents and more than 95% purity in aliquots
C.Elegans TrxR1	More than 90% Sec contents and more than 95% purity in aliquots
Rat TrxR1	More than 90% Sec contents and more than 95% purity in aliquots
Rat TrxR1	More than 90% Sec contents and more than 95% purity in aliquots
Human GPX1	Approx. 20% Sec contents, mixed with inactive forms containing Sec-to-Lys and Sec-to-Gln substitutions, at more than 95 % purity in aliquots
Human GPX2	Approx. 20% Sec contents, mixed with inactive forms containing Sec-to-Lys and Sec-to-Gln substitutions, at more than 95% purity in aliquots
Human GPX4	Approx. 20% Sec contents, mixed with inactive forms containing Sec-to-Lys and Sec-to-Gln substitutions, at more than 95% purity in aliquots
Human GPX4 +	Approx. 100 % Sec contents and more than 95% purity in aliquots
Human DIO2	Approx. 20% Sec contents, mixed with inactive forms containing Sec-to-Lys and Sec-to-Gln substitutions, at more than 95% purity in aliquots
Human DIO3	Approx. 20% Sec contents, mixed with inactive forms containing Sec-to-Lys and Sec-to-Gln substitutions, at more than 95% purity in aliquots
Shistosoma mansoni TGR	More than 90% Sec contents and more than 95% purity in aliquots
Sel-tagged synthetic selenoproteins	Approx. 90% Sec contents, with the tetrapeptide sequence -Gly-Cys-Sec-Gly added to the C-terminus of any requested protein to be recombinantly expressed

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