CLAIMS

~~We claim:~~

1. A ~~lactose or lactose analogues inducible~~ bacterial expression vector for enhanced secretion of recombinant protein from ~~a~~ host bacterial cells, preferably, *E. coli*, comprising of:
at least one secretory signal sequence;

at least one gene expression cassette comprising of at least one inducible promoter, an RBS**,** DNA sequence encoding the recombinant protein, DNA sequence encoding an affinity tag, and at least one gene terminator, with the secretory signal sequence operably linked to the gene expression cassette, and the DNA sequence of the affinity tag operably linked to the DNA sequence of the recombinant protein;

at least one bacterial *ori* gene sequence for replication of the vector in the host bacterial cell; and

a DNA sequence for coding a selectable marker, comprising of at least one antibiotic resistance gene sequence, with a suitable promoter and a gene terminator sequence flanking the DNA sequence of the selectable marker,

wherein,
the secretory signal sequence is a combination of a) at least one DNA sequence encoding a signal sequence of genes selected from the group consisting of *pelB, ompA, yebF,* and *ompF,* and b) at least one sequence belonging to the group consisting of Seq. ID 5 and Seq. ID 6 encoding a truncated yebF ~~a~~ carrier peptide~~, preferably, DNA sequence encoding truncated yebF~~;
~~the DNA sequence encoding the truncated yebF belongs to the group consisting of Seq. ID 5 and Seq. ID 6;~~
Seq. ID 5 encodes truncated yebF ~~represented by~~of Seq. ID 7;
Seq. ID 6 encodes truncated yebF ~~represented by~~of ~~-~~Seq. ID 8;

the DNA sequence Seq. ID 6 is synthesized by mutating Seq. ID 5, wherein, TGC codon at position 40 in Seq. ID 5 is mutated to GCG codon, to mutate Cys at position 14 of amino acid sequence ~~represented by~~in Seq. ID 7 to Ala at position 14 of amino acid sequence ~~represented by~~in Seq. ID 8; and

~~.~~the bacterial expression vector for enhanced secretion of recombinant protein is 6793 base pairs vector of Seq. ID 13.

2. The bacterial expression vector as claimed in claim 1, wherein, DNA sequence encoding ~~a~~ the signal sequence encodes amino acid sequence ~~is~~ selected from the group ~~comprising~~ consisting of ~~DNA sequences represented by~~

Seq. ID ~~1~~9 for signal peptide of pelB,

Seq. ID ~~2~~11 for signal peptide of ompA,

Seq. ID ~~3~~10 for signal peptide of yebF, and

Seq. ID ~~4~~12 for signal peptide of ompF.

~~3. The bacterial expression vector as claimed in **claim 1**, wherein, the DNA sequence of signal peptide *pelB is* represented by Seq. ID 1 encoding amino acid sequence Seq. ID 9, the DNA sequence of signal peptide *ompA is* represented by Seq. ID 2 encoding amino acid sequence Seq. ID 11, the DNA sequence of signal peptide *yebF* is represented by Seq. ID 3 encoding amino acid sequence Seq. ID 10, and the DNA sequence of signal peptide *ompF is* represented by Seq. ID 4 encoding amino acid sequence Seq. ID 12.~~

~~4. A lactose or lactose analogues inducible bacterial expression vector for enhanced secretion of recombinant protein from a host bacterial cells, preferably, *E. coli*, comprising a secretory signal sequence,~~

~~wherein~~

~~the secretory signal sequence is a combination of DNA sequence of signal peptide of ompF represented by Seq. ID 4, and truncated yebF peptide encoded by Seq. ID 6;~~

~~the bacterial expression vector is represented by Seq. ID 13 of 6793 basepair; and~~

~~the bacterial expression vector of Seq. ID 13 provides a yield of recombinant protein ranging from about 0.5g/L to about 5g/L.~~

~~5.~~3.The bacterial expression vector as claimed in claim 1, wherein vector of Seq. ID 13 encodes secretory signal sequence which is a combination of signal peptide of ompf of Seq. ID 12 and truncated yebF peptide of Seq. ID 8.

~~6.~~4.The bacterial expression vector as claimed in claim 1, wherein vector of Seq. ID 13 provides a yield of recombinant protein 5g/L in 6 hours.