

Table S1. Strains and plasmids used in this study.

Strains/Plasmids	Relevant characteristics	Sources or reference
Strains		
AFP111	F+ λ - <i>rpoS</i> 396(Am) <i>rph</i> -1 Δ <i>pflAB</i> ::Cam <i>ldhA</i> ::Kan <i>ptsG</i>	[18]
DH5 α	F- ϕ 80 <i>lacZ</i> Δ M15 Δ (<i>lacZ</i> YA- <i>argF</i>) U169 <i>end</i> A1 <i>recA1 hsdR</i> 17(<i>r</i> _k ⁻ , <i>m</i> _k ⁻) <i>sup</i> E44 λ - <i>thi</i> -1 <i>gyrA</i> 96 <i>relA1 phoA</i>	TransGen Biotech
BL21(DE3)	F ⁻ <i>omp</i> <i>ThsdS</i> _B (<i>r</i> _B ⁻ <i>m</i> _B ⁻) <i>gal dcm</i>	TransGen Biotech
Tang1505	AFP111/ pTrc99A	This study
Tang1534	AFP111/ pTrc- <i>cra</i>	This study
Tang1646	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R	This study
Tang1647	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at G274R	This study
Tang1648	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D101R	This study
Tang1649	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75K	This study
Tang1650	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Y220K	This study
Tang1651	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148K	This study
Tang1652	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at L191K	This study
Tang1653	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at N73Y	This study
Tang1654	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S246K	This study
Tang1655	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at F273K	This study
Tang1656	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Y76R	This study
Tang1657	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D275E	This study
Tang1658	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Q291R	This study
Tang1659	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at A248K	This study
Tang1660	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at R323K	This study
Tang1661	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at N73R	This study

Tang1662	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75R	This study
Tang1663	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at T245S	This study
Tang1664	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D275Q	This study
Tang1665	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at N73F	This study
Tang1666	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at K322D	This study
Tang1667	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at F247P	This study
Tang1668	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at T74K	This study
Tang1669	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at A248F	This study
Tang1670	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at R149K	This study
Tang1671	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148E	This study
Tang1672	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Y220P	This study
Tang1673	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Y220L	This study
Tang1674	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at R197K	This study
Tang1675	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at F247E	This study
Tang1676	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Y76D	This study
Tang1677	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at F247R	This study
Tang1678	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75E	This study
Tang1679	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at R149F	This study
Tang1680	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at R149H	This study
Tang1681	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Q291M	This study
Tang1682	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at Q291W	This study
Tang1683	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D101R, D148R, and G274R	This study
Tang1684	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, A248F, and G274R	This study

Tang1685	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, Y220K, and G274R	This study
Tang1686	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D101R, D148R, and S246K	This study
Tang1687	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, G274R, and D275Q	This study
Tang1688	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at N73Y, D148R, and G274R	This study
Tang1689	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75K, A248F, and G274R	This study
Tang1690	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, T245S, and G274R	This study
Tang1691	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, S246K, and G274R	This study
Tang1692	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75K, S246K, and G274R	This study
Tang1693	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, S246K, and F247P	This study
Tang1694	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, F273K, and G274R	This study
Tang1695	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, Y220K, and S246K	This study
Tang1696	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, F247P, and G274R	This study
Tang1697	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at D148R, S246K, and A248F	This study
Tang1698	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75K, F273K, and G274R	This study
Tang1699	AFP111/ pTrc99A carrying the <i>cra</i> gene with mutation at S75K, G274R, and D275Q	This study
Plasmids		
pTrc99A	<i>Amp^R</i> , pBR322 ori, <i>lacI^q</i> , <i>trc</i> promoter	Invitrogen
pET28a	<i>Kan^R</i> , pBR322 ori, <i>lacI^q</i> , T7 promoter	Novagene
pTrc- <i>cra</i>	pTrc99A carrying <i>cra</i> gene	This study
pET- <i>cra</i>	pET28a carrying <i>cra</i> gene	This study
pET-CI	pET28a carrying <i>cra</i> gene with mutation at D101R, D148R, and G274R	This study
pET-CII	pET28a carrying <i>cra</i> gene with mutation at D148R, A248F, and G274R	This study
pET-CIII	pET-28a carrying <i>cra</i> gene with mutation at N73Y, D148R, and G274R	This study
