

Table S1. Statistical significance of *KRAS* and *HRAS* expression levels in patients with NSCLC for all figures from UALCAN and TNMplot databases.

Figure	Gene	NSCLC subtype	Database	Comparison	N	Min	Q1	Med	Q3	Max	Upper Whisker	p value
2A	KRAS	LUAD	TNMplot	Normal vs. Tumor	486 524	290 262	724 877	931 1358.5	1268 2219.5	5377 50410	2006 4230	3.74x10⁻²³
2B	KRAS	LUSC	TNMplot	Normal vs. Tumor	476 501	373 259	756.5 980	983.5 1364	1253.5 1999	6472 21630	1992 3475	5.76x10⁻³⁰
2C	HRAS	LUAD	TNMplot	Normal vs. Tumor	486 524	175 33	393 324	525.5 483.5	721 716.5	2843 2790	1190 1282	9.58x10⁻⁰⁴
2D	HRAS	LUSC	TNMplot	Normal vs. Tumor	476 501	96 117	414.5 689	541 1024	720 1522	2744 6821	1169 2762	1.03x10⁻⁶²
3A	KRAS	LUAD	UALCAN	Normal vs. Tumor	59 515	8.68 5.39	12.25 14.51	14.78 19.52	17.65 26.19	25.17 47.71		7.88x10⁻¹³
3B	KRAS	LUAD	UALCAN	Normal-vs-Stage1								1.698x10⁻¹³
3B	KRAS	LUAD	UALCAN	Normal-vs-Stage2								2.09x10⁻³
3B	KRAS	LUAD	UALCAN	Normal-vs-Stage3								2.08x10⁻⁶
3B	KRAS	LUAD	UALCAN	Normal-vs-Stage4								0.01
3B	KRAS	LUAD	UALCAN	Stage1-vs-Stage2								0.168
3B	KRAS	LUAD	UALCAN	Stage1-vs-Stage3								0.537
3B	KRAS	LUAD	UALCAN	Stage1-vs-Stage4								0.847
3B	KRAS	LUAD	UALCAN	Stage2-vs-Stage3								0.287
3B	KRAS	LUAD	UALCAN	Stage2-vs-Stage4								0.289
3B	KRAS	LUAD	UALCAN	Stage3-vs-Stage4								0.869
3C	KRAS	LUAD	UALCAN	Normal-vs-Male								4.88x10⁻¹⁰
3C	KRAS	LUAD	UALCAN	Normal-vs-Female								1.79x10⁻⁰⁶

3C	KRAS	LUAD	UALCAN	Male-vs-Female	0.857
3D	KRAS	LUAD	UALCAN	Normal-vs-Age(21-40Yrs)	0.242
3D	KRAS	LUAD	UALCAN	Normal-vs-Age(41-60Yrs)	1.20 x10⁻⁰³
3D	KRAS	LUAD	UALCAN	Normal-vs-Age(61-80Yrs)	9.53 x10⁻¹²
3D	KRAS	LUAD	UALCAN	Normal-vs-Age(81-100Yrs)	1.42 x10⁻⁰³
3D	KRAS	LUAD	UALCAN	Age(21-40Yrs)-vs-Age(41-60Yrs)	0.306
3D	KRAS	LUAD	UALCAN	Age(21-40Yrs)-vs-Age(61-80Yrs)	0.777
3D	KRAS	LUAD	UALCAN	Age(21-40Yrs)-vs-Age(81-100Yrs)	0.402
3D	KRAS	LUAD	UALCAN	Age(41-60Yrs)-vs-Age(61-80Yrs)	0.433
3D	KRAS	LUAD	UALCAN	Age(41-60Yrs)-vs-Age(81-100Yrs)	0.514
3D	KRAS	LUAD	UALCAN	Age(61-80Yrs)-vs-Age(81-100Yrs)	0.119
3E	KRAS	LUAD	UALCAN	Normal-vs-Non smoker	1.32 x10⁻³
3E	KRAS	LUAD	UALCAN	Normal-vs-Smoker	1.35 x10⁻⁴
3E	KRAS	LUAD	UALCAN	Normal-vs-Reformed smoker1	9.69 x10⁻¹¹
3E	KRAS	LUAD	UALCAN	Normal-vs-Reformed smoker2	1.38x10⁻⁴
3E	KRAS	LUAD	UALCAN	Non smoker-vs-Smoker	0.019
3E	KRAS	LUAD	UALCAN	Non smoker-vs-Reformed smoker1	4.09x10⁻³
3E	KRAS	LUAD	UALCAN	Non smoker-vs-Reformed smoker2	0.015
3E	KRAS	LUAD	UALCAN	Smoker-vs-Reformed smoker1	0.448
3E	KRAS	LUAD	UALCAN	Smoker-vs-Reformed smoker2	0.848
3E	KRAS	LUAD	UALCAN	Reformed smoker1-vs-Reformed smoker2	0.343
3F	KRAS	LUAD	UALCAN	Normal-vs-N0	1.91x10⁻⁸
3F	KRAS	LUAD	UALCAN	Normal-vs-N1	4.73x10⁻⁶
3F	KRAS	LUAD	UALCAN	Normal-vs-N2	1.65x10⁻⁵

3F	KRAS	LUAD	UALCAN	Normal-vs-N3	0.797
3F	KRAS	LUAD	UALCAN	N0-vs-N1	0.248
3F	KRAS	LUAD	UALCAN	N0-vs-N2	0.493
3F	KRAS	LUAD	UALCAN	N0-vs-N3	0.673
3F	KRAS	LUAD	UALCAN	N1-vs-N2	0.672
3F	KRAS	LUAD	UALCAN	N1-vs-N3	0.527
3F	KRAS	LUAD	UALCAN	N2-vs-N3	0.473
4A	KRAS	LUSC	UALCAN	Normal-vs-tumor	<1x10⁻¹²
4B	KRAS	LUSC	UALCAN	Normal-vs-Stage1	2.55x10⁻¹⁵
4B	KRAS	LUSC	UALCAN	Normal-vs-Stage2	2.91x10⁻⁷
4B	KRAS	LUSC	UALCAN	Normal-vs-Stage3	8.84x10⁻⁴
4B	KRAS	LUSC	UALCAN	Normal-vs-Stage4	0.012
4B	KRAS	LUSC	UALCAN	Stage1-vs-Stage2	0.782
4B	KRAS	LUSC	UALCAN	Stage1-vs-Stage3	0.824
4B	KRAS	LUSC	UALCAN	Stage1-vs-Stage4	0.013
4B	KRAS	LUSC	UALCAN	Stage2-vs-Stage3	0.978
4B	KRAS	LUSC	UALCAN	Stage2-vs-Stage4	0.016
4B	KRAS	LUSC	UALCAN	Stage3-vs-Stage4	0.054
4C	KRAS	LUSC	UALCAN	Normal-vs-Male	1.62x10⁻¹²
4C	KRAS	LUSC	UALCAN	Normal-vs-Female	3.81x10⁻¹²
4C	KRAS	LUSC	UALCAN	Male-vs-Female	1.20x10⁻³
4D	KRAS	LUSC	UALCAN	Normal-vs-Age(21-40Yrs)	0.052
4D	KRAS	LUSC	UALCAN	Normal-vs-Age(41-60Yrs)	2.02x10⁻⁷
4D	KRAS	LUSC	UALCAN	Normal-vs-Age(61-80Yrs)	1.62x10⁻¹²
4D	KRAS	LUSC	UALCAN	Normal-vs-Age(81-100Yrs)	2.80x10⁻³

4D	KRAS	LUSC	UALCAN	Age(21-40Yrs)-vs-Age(41-60Yrs)	0.653
4D	KRAS	LUSC	UALCAN	Age(21-40Yrs)-vs-Age(61-80Yrs)	0.735
4D	KRAS	LUSC	UALCAN	Age(21-40Yrs)-vs-Age(81-100Yrs)	0.968
4D	KRAS	LUSC	UALCAN	Age(41-60Yrs)-vs-Age(61-80Yrs)	0.340
4D	KRAS	LUSC	UALCAN	Age(41-60Yrs)-vs-Age(81-100Yrs)	9.86x10⁻³
4D	KRAS	LUSC	UALCAN	Age(61-80Yrs)-vs-Age(81-100Yrs)	0.013
4E	KRAS	LUSC	UALCAN	Normal-vs-Non smoker	0.048
4E	KRAS	LUSC	UALCAN	Normal-vs-Smoker	3.17x10⁻⁸
4E	KRAS	LUSC	UALCAN	Normal-vs-Reformed smoker1	1.03x10⁻⁷
4E	KRAS	LUSC	UALCAN	Normal-vs-Reformed smoker2	1.65x10⁻¹¹
4E	KRAS	LUSC	UALCAN	Non smoker-vs-Smoker	1.75x10⁻⁴
4E	KRAS	LUSC	UALCAN	Non smoker-vs-Reformed smoker1	0.206
4E	KRAS	LUSC	UALCAN	Non smoker-vs-Reformed smoker2	1.22x10⁻³
4E	KRAS	LUSC	UALCAN	Smoker-vs-Reformed smoker1	2.24x10⁻³
4E	KRAS	LUSC	UALCAN	Smoker-vs-Reformed smoker2	0.131
4E	KRAS	LUSC	UALCAN	Reformed smoker1-vs-Reformed smoker2	0.020
4F	KRAS	LUSC	UALCAN	Normal-vs-N0	1.44x10⁻¹⁵
4F	KRAS	LUSC	UALCAN	Normal-vs-N1	1.96x10⁻⁶
4F	KRAS	LUSC	UALCAN	Normal-vs-N2	3.82x10⁻⁵
4F	KRAS	LUSC	UALCAN	Normal-vs-N3	0.153
4F	KRAS	LUSC	UALCAN	N0-vs-N1	0.435
4F	KRAS	LUSC	UALCAN	N0-vs-N2	0.287
4F	KRAS	LUSC	UALCAN	N0-vs-N3	0.666
4F	KRAS	LUSC	UALCAN	N1-vs-N2	0.154

4F	KRAS	LUSC	UALCAN	N1-vs-N3	0.193
4F	KRAS	LUSC	UALCAN	N2-vs-N3	0.724
5A	HRAS	LUAD	UALCAN	Normal-vs-tumor	6.32x10⁻⁹
5B	HRAS	LUAD	UALCAN	Normal-vs-Stage1	5.30x10⁻⁷
5B	HRAS	LUAD	UALCAN	Normal-vs-Stage2	1.46x10⁻³
5B	HRAS	LUAD	UALCAN	Normal-vs-Stage3	7.74x10⁻⁵
5B	HRAS	LUAD	UALCAN	Normal-vs-Stage4	0.254
5B	HRAS	LUAD	UALCAN	Stage1-vs-Stage2	0.491
5B	HRAS	LUAD	UALCAN	Stage1-vs-Stage3	0.085
5B	HRAS	LUAD	UALCAN	Stage1-vs-Stage4	0.870
5B	HRAS	LUAD	UALCAN	Stage2-vs-Stage3	0.043
5B	HRAS	LUAD	UALCAN	Stage2-vs-Stage4	0.936
5B	HRAS	LUAD	UALCAN	Stage3-vs-Stage4	0.292
5C	HRAS	LUAD	UALCAN	Normal-vs-Male	5.16x10⁻⁷
5C	HRAS	LUAD	UALCAN	Normal-vs-Female	2.06x10⁻⁶
5C	HRAS	LUAD	UALCAN	Male-vs-Female	0.214
5D	HRAS	LUAD	UALCAN	Normal-vs-Age(21-40Yrs)	0.092
5D	HRAS	LUAD	UALCAN	Normal-vs-Age(41-60Yrs)	5.16x10⁻⁷
5D	HRAS	LUAD	UALCAN	Normal-vs-Age(61-80Yrs)	1.56x10⁻⁵
5D	HRAS	LUAD	UALCAN	Normal-vs-Age(81-100Yrs)	0.293
5D	HRAS	LUAD	UALCAN	Age(21-40Yrs)-vs-Age(41-60Yrs)	0.029
5D	HRAS	LUAD	UALCAN	Age(21-40Yrs)-vs-Age(61-80Yrs)	0.966
5D	HRAS	LUAD	UALCAN	Age(21-40Yrs)-vs-Age(81-100Yrs)	0.426
5D	HRAS	LUAD	UALCAN	Age(41-60Yrs)-vs-Age(61-80Yrs)	0.026
5D	HRAS	LUAD	UALCAN	Age(41-60Yrs)-vs-Age(81-100Yrs)	0.040

5D	HRAS	LUAD	UALCAN	Age(61-80Yrs)-vs-Age(81-100Yrs)	0.454
5E	HRAS	LUAD	UALCAN	Normal-vs-Non smoker	0.028
5E	HRAS	LUAD	UALCAN	Normal-vs-Smoker	3.53x10⁻⁶
5E	HRAS	LUAD	UALCAN	Normal-vs-Reformed smoker1	2.58x10⁻⁴
5E	HRAS	LUAD	UALCAN	Normal-vs-Reformed smoker2	1.23x10⁻⁴
5E	HRAS	LUAD	UALCAN	Non smoker-vs-Smoker	0.028
5E	HRAS	LUAD	UALCAN	Non smoker-vs-Reformed smoker1	0.599
5E	HRAS	LUAD	UALCAN	Non smoker-vs-Reformed smoker2	0.448
5E	HRAS	LUAD	UALCAN	Smoker-vs-Reformed smoker1	0.042
5E	HRAS	LUAD	UALCAN	Smoker-vs-Reformed smoker2	0.085
5E	HRAS	LUAD	UALCAN	Reformed smoker1-vs-Reformed smoker2	0.715
5F	HRAS	LUAD	UALCAN	Normal-vs-N0	4.21x10⁻⁸
5F	HRAS	LUAD	UALCAN	Normal-vs-N1	4.02x10⁻³
5F	HRAS	LUAD	UALCAN	Normal-vs-N2	3.20x10⁻³
5F	HRAS	LUAD	UALCAN	Normal-vs-N3	0.536
5F	HRAS	LUAD	UALCAN	N0-vs-N1	0.725
5F	HRAS	LUAD	UALCAN	N0-vs-N2	0.459
5F	HRAS	LUAD	UALCAN	N0-vs-N3	0.461
5F	HRAS	LUAD	UALCAN	N1-vs-N2	0.397
5F	HRAS	LUAD	UALCAN	N1-vs-N3	0.490
5F	HRAS	LUAD	UALCAN	N2-vs-N3	0.718
6A	HRAS	LUSC	UALCAN	Normal-vs-tumor	<1x10⁻¹²
6B	HRAS	LUSC	UALCAN	Normal-vs-Stage1	<1x10⁻¹²
6B	HRAS	LUSC	UALCAN	Normal-vs-Stage2	<1x10⁻¹²

6B	HRAS	LUSC	UALCAN	Normal-vs-Stage3	1.62x10⁻¹²
6B	HRAS	LUSC	UALCAN	Normal-vs-Stage4	0.043
6B	HRAS	LUSC	UALCAN	Stage1-vs-Stage2	0.329
6B	HRAS	LUSC	UALCAN	Stage1-vs-Stage3	0.897
6B	HRAS	LUSC	UALCAN	Stage1-vs-Stage4	0.624
6B	HRAS	LUSC	UALCAN	Stage2-vs-Stage3	0.429
6B	HRAS	LUSC	UALCAN	Stage2-vs-Stage4	0.802
6B	HRAS	LUSC	UALCAN	Stage3-vs-Stage4	0.646
6C	HRAS	LUSC	UALCAN	Normal-vs-Male	1.62x10⁻¹²
6C	HRAS	LUSC	UALCAN	Normal-vs-Female	<1x10⁻¹²
6C	HRAS	LUSC	UALCAN	Male-vs-Female	0.361
6D	HRAS	LUSC	UALCAN	Normal-vs-Age(21-40Yrs)	0.553
6D	HRAS	LUSC	UALCAN	Normal-vs-Age(41-60Yrs)	1.62x10⁻¹²
6D	HRAS	LUSC	UALCAN	Normal-vs-Age(61-80Yrs)	1.62x10⁻¹²
6D	HRAS	LUSC	UALCAN	Normal-vs-Age(81-100Yrs)	5.88x10⁻⁸
6D	HRAS	LUSC	UALCAN	Age(21-40Yrs)-vs-Age(41-60Yrs)	0.230
6D	HRAS	LUSC	UALCAN	Age(21-40Yrs)-vs-Age(61-80Yrs)	0.221
6D	HRAS	LUSC	UALCAN	Age(21-40Yrs)-vs-Age(81-100Yrs)	0.066
6D	HRAS	LUSC	UALCAN	Age(41-60Yrs)-vs-Age(61-80Yrs)	0.207
6D	HRAS	LUSC	UALCAN	Age(41-60Yrs)-vs-Age(81-100Yrs)	0.503
6D	HRAS	LUSC	UALCAN	Age(61-80Yrs)-vs-Age(81-100Yrs)	0.122
6E	HRAS	LUSC	UALCAN	Normal-vs-Non smoker	5.81x10⁻⁵
6E	HRAS	LUSC	UALCAN	Normal-vs-Smoker	<1x10⁻¹²
6E	HRAS	LUSC	UALCAN	Normal-vs-Reformed smoker1	<1x10⁻¹²
6E	HRAS	LUSC	UALCAN	Normal-vs-Reformed smoker2	<1x10⁻¹²

6E	HRAS	LUSC	UALCAN	Non smoker-vs-Smoker	2.43x10⁻⁴
6E	HRAS	LUSC	UALCAN	Non smoker-vs-Reformed smoker1	0.034
6E	HRAS	LUSC	UALCAN	Non smoker-vs-Reformed smoker2	0.043
6E	HRAS	LUSC	UALCAN	Smoker-vs-Reformed smoker1	0.028
6E	HRAS	LUSC	UALCAN	Smoker-vs-Reformed smoker2	1.32x10⁻³
6E	HRAS	LUSC	UALCAN	Reformed smoker1-vs-Reformed smoker2	0.678
6F	HRAS	LUSC	UALCAN	Normal-vs-N0	<1x10⁻¹²
6F	HRAS	LUSC	UALCAN	Normal-vs-N1	<1x10⁻¹²
6F	HRAS	LUSC	UALCAN	Normal-vs-N2	6.73x10⁻¹²
6F	HRAS	LUSC	UALCAN	Normal-vs-N3	0.073
6F	HRAS	LUSC	UALCAN	N0-vs-N1	0.898
6F	HRAS	LUSC	UALCAN	N0-vs-N2	0.824
6F	HRAS	LUSC	UALCAN	N0-vs-N3	0.644
6F	HRAS	LUSC	UALCAN	N1-vs-N2	0.775
6F	HRAS	LUSC	UALCAN	N1-vs-N3	0.635
6F	HRAS	LUSC	UALCAN	N2-vs-N3	0.630

Note: Significance is shown by bold numbers. Abbreviations: LUAD – lung adenocarcinoma; LUSC – lung squamous cell carcinoma; Reformed smoker1: <15 years; Reformed smoker2: > 15 years; N0 - No regional lymph node metastasis; N1 - Metastases in 1 to 3 axillary lymph nodes; N2 - Metastases in 4 to 9 axillary lymph nodes; N3 - Metastases in 10 or more axillary lymph nodes S

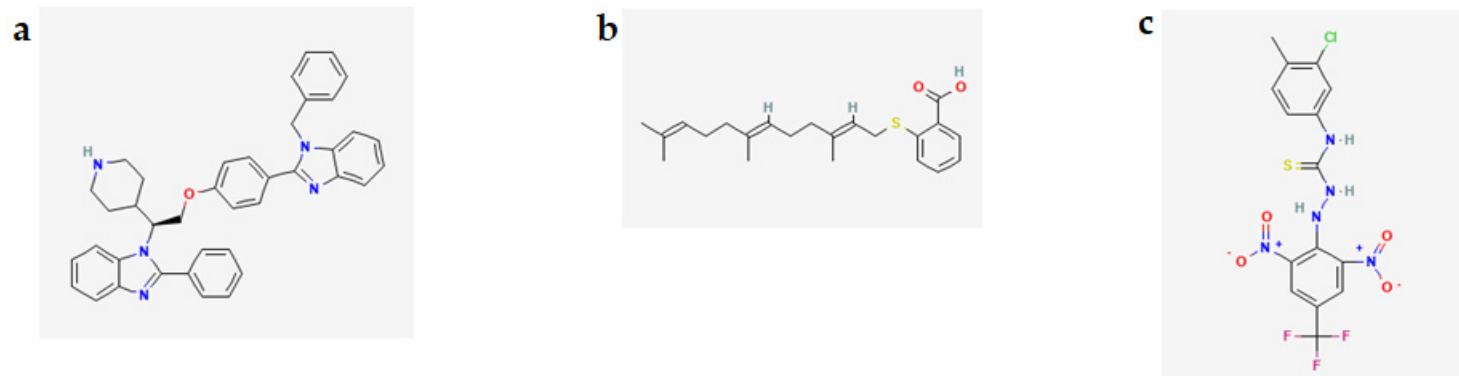


Figure S1. The chemical structures of the of the three RAS inhibitors: deltarasin (**a**), farnesylthiosalicylic acid (**b**), Kobe0065 (**c**) [22–24].

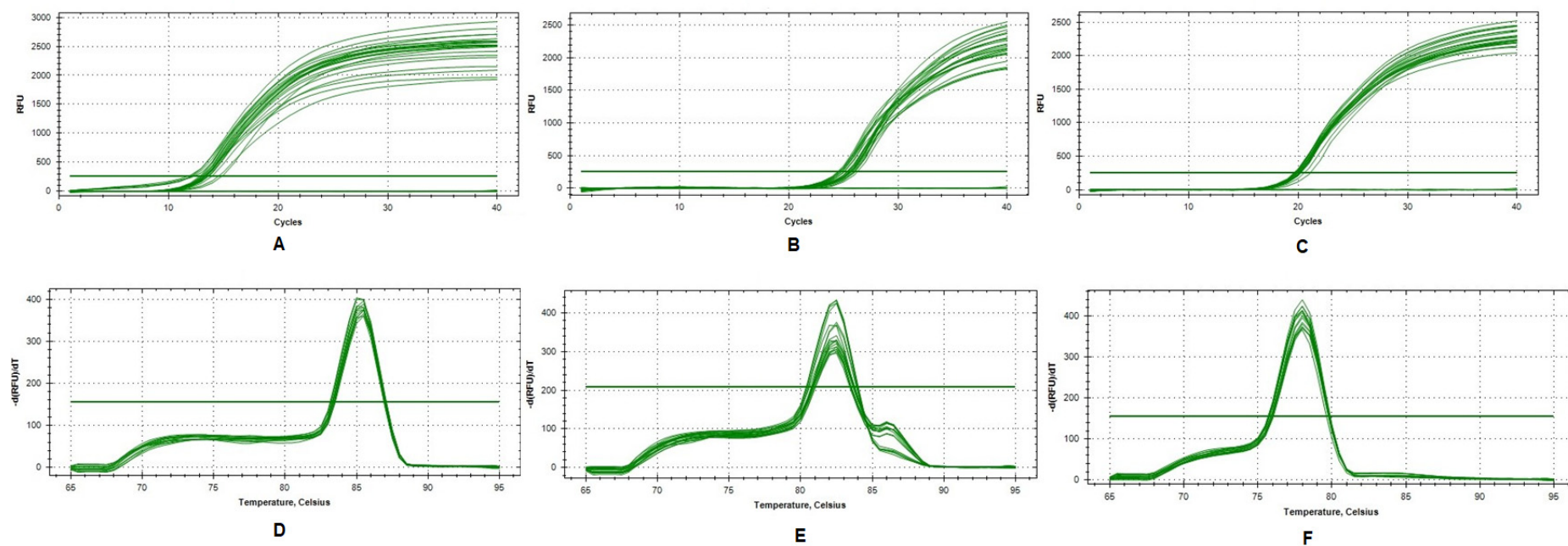


Figure S2. The examples of: the amplification curve plots for *GAPDH* (A), *HRAS* (B) and *KRAS* (C) genes including NTC and the melting curves of the real-time PCR amplification products of the *GAPDH* (D), *HRAS* (E) and *KRAS* (F) genes expressed as $-\Delta(RFU)/\Delta T$ vs. temperature.

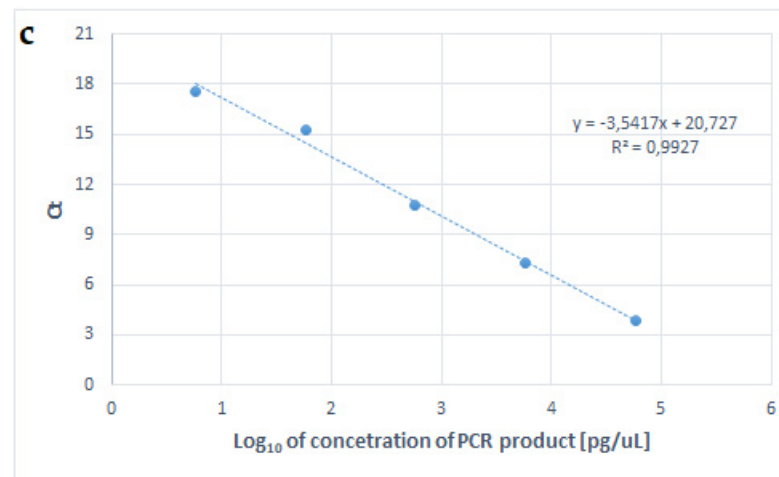
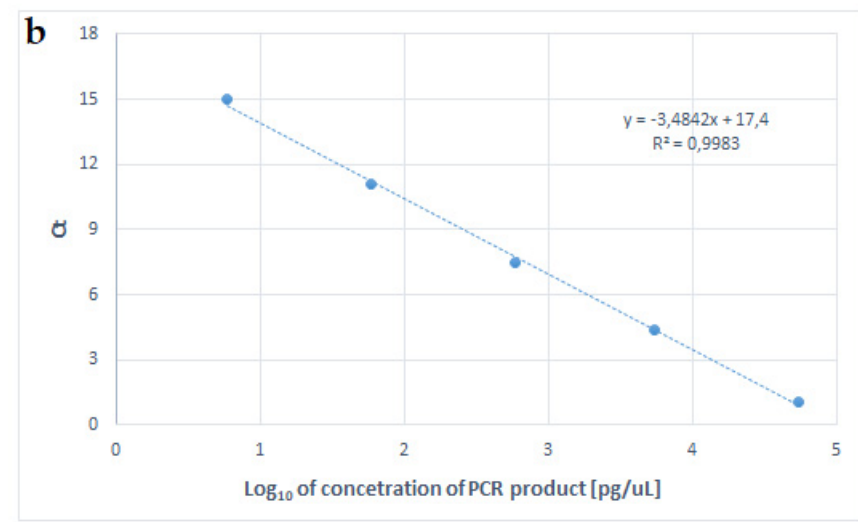
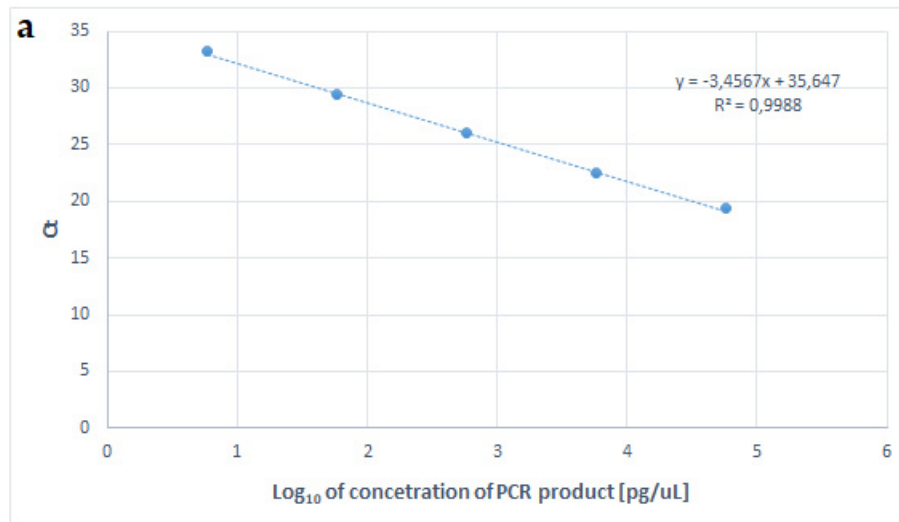


Figure S3. The examples of standard curve plots for (a) *GAPDH* (slope= -3.4567; E=1.95; R^2 =0.9988), (b) *KRAS* (slope=-3.4842; E=1.94; R^2 =0.9982), (c) *HRAS* (slope=-3.5417; E=1.92; R^2 =0.9927) (x-axis: log₁₀ concentration of PCR product [pg/ μ L]; y-axis: Ct values).