Supplementary material for

Preparation and characterization of innovative olive leave extract@layered double hydroxide antioxidant nanohybrids

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Materials and Methods

Enzyme-Assisted Extraction

The following commercial enzyme preparations were used: pectinolytic preparation Pectinex XXL, and Viscozyme L. (Cellulase, Hemicellulase, Xylanase) (all from Novozymes A/S, Bagsvaerd, Denmark). Finely grounded (particle size < 700 μm) olive leaves were mixed with water (10:1, v/w), acidified (pH 4.0) with HCl, and left for 1 h for rehydration at 25 ◦C. After pH adjustment (pH 4.0), the suspension (100.0 g) was placed in a 50 ◦C water bath (Memmert Schutzart DIN 40,050-IP 20, Germany) for 20 min before enzymes (Pectinex XXL, and Viscozyme L.) were added. After incubation at 50 ◦C, the sample was placed in a boiling water bath for 10 min to inactivate the enzymes, then immediately cooled and finally filtered through a paper filter under vacuum and weighed to determine the extract yield [1]. The same process was followed for the control sample and, instead of enzymes, distilled water was used at the same amount as the enzymes in its sample.

Quantitative Analysis of Hydroxytyrosol, Luteolin-7-O-glucoside, Apigenin-4-O-glucoside and Oleuropein of OLE with HPLC-DAD method

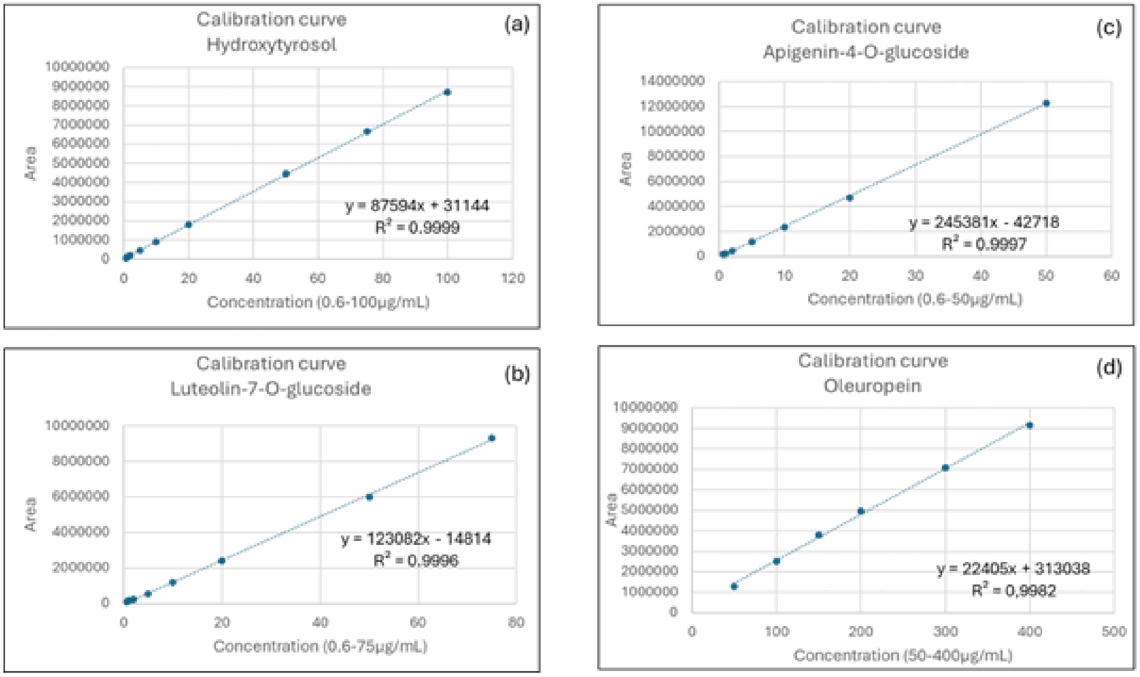


Figure S1. Obtained calibration curves of (a) Hydoxytyrosol, (b) Luteolin-7-O-glucoside, (c) Apigenin-4-O-glucoside and (d) Oleuropein.

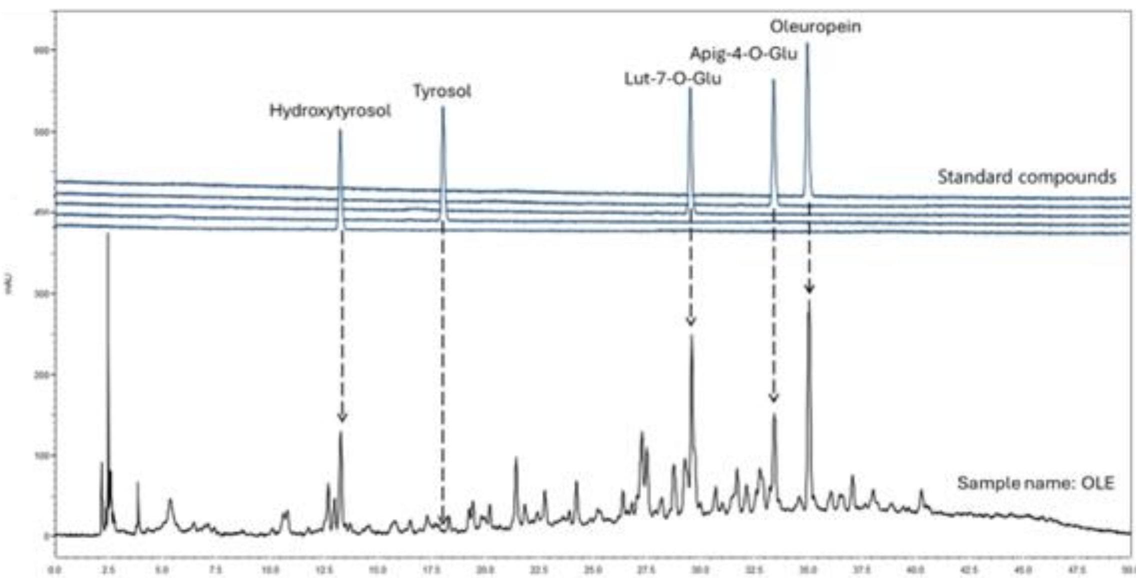


Figure S2. HPLC-DAD chromatographic plot at 280 nm for pure OLE

Physicochemical characterization of OLE@LDH_Zn/Al_x/1 nanohybrids

X-Ray Diffraction (XRD) studies

Obtained OLE@LDH_Zn/Al_x/1 nanohybrids were characterized with X-Ray Diffraction (XRD) analysis using a Brüker XRD D8 Advance diffractometer (Brüker, Analytical Instruments, S.A., Athens, Greece) equipped with a LINXEYE XE High Resolution Energy Dispersive detector. Diffractometer was thermostated at 20 °C, and the beam monochromator was operated at a voltage of 40 kV and a beam current of 40 mA. CuKα radiator worked in 1-D mode with a wave length λ = 1.541874 Å. Scanning parameters were set as follows: two theta range 0.5–40°, increment 0.03°, PSD 0.764 counting time 1022 s and slit width 0.6 mm. Each sample was oriented onto glass samplers and was carefully adjusted so that its surface was at the same level as the reference plane of the instrument

Fourier Transform Infrared Spectroscopy (FTIR) studies

FTIR spectra of pure OLE and all obtained OLE@LDH_Zn/Al_x/1 nanohybrids were recorded using an FT/IR-6000 JASCO Fourier-transform spectrometer (JASCO, Interlab, S.A., Athens, Greece). Measurements were carried out using the KBr (0.5 %wt. to 1 %wt.) tablet technique. The spectra recorded over the wavenumber range from 4000 to 400 cm^{-1} at a resolution of 4 cm^{-1} and 64 scans were averaged to reduce noise.

Scanning Electron Microscopy (SEM) studies

High Resolution Scanning electron microscopy (HR-SEM) images of pure OLE and all obtained OLE@LDH_Zn/Al_x/1 nanohybrids acquired using a Zeiss Gemini 500 SEM at a low accelerating voltage of 3 kV to reduce the excitation volume and enhance resolution.

In Vitro Antioxidant Activity Determination of pure OLE and obtained OLE@LDH_Zn/Al_x/1 nanohybrids

For all obtained OLE@LDH_Zn/Al_x/1 nanohybrids as well as pure OLE the concentration required to obtain a 50% antioxidant effect (EC_{50}) was calculated according to the methodology described recently *[3]*, *[4]*.

For the preparation of 2,2-diphenyl-1-picrylhydrazyl free radical [DPPH$^\bullet$] standard solutions, 0.0212 g of [DPPH$^\bullet$] free radical was dissolved in 250 mL of methanol to obtain a 2.16 mM (mmol/L) methanolic solution. Next, the flask was vortexed under dark conditions, and its pH (Milwaukee MW102-FOOD PRO+ 2-in-1 pH and Temperature Meter) was measured to ensure its neutrality (7.02 ± 0.01). Finally, the solution was placed in a refrigerator at 4 ± 1 °C under dark conditions for stabilization.

For the preparation of a [DPPH$^\bullet$] free radical calibration curve, 2.16 mM (mmol/L) methanolic solution of [DPPH$^\bullet$] free radical was diluted by adding appropriate volumes of methanol to obtain concentrations of 10, 20, 30, 40, and 50 mg/L, and their absorbance was measured with a SHIMADZU UV-1900 UV/VIS Spectrometer at 517 nm. The calibration curve of absorbance (y) versus the concentration (x) of [DPPH$^\bullet$] free radical was expressed by the following equation:

$$y = 0.0388x + 0.015;\ R^2 = 0.9994 \quad (1)$$

For the determination of the concentration required to obtain a 50% or 60% antioxidant effect (EC_{50}) from all obtained OLE@LDH_Zn/Al_x/1 nanohybrids, as well as pure OLE 5 10, 20, 30, and 40 mg of granule nanohybrids or 5, 10, 20, 30, and 50 μL of pure OLE were placed in dark vials and three replicates were performed for each sample. Thereafter, 3 mL of [DPPH$^\bullet$] free radical methanolic solution and 2 mL of acetate buffer 100 mM (pH = 7.10) were added to each vial, and the absorbance of the reaction mixture was measured at 517 nm after 24 h. For a blank sample, we used a vial containing 3 mL of [DPPH•] free radical methanolic solution and 2 mL of acetate buffer without the addition of any granule film. The % inhibition of [DPPH•] was calculated using the following equation:

$$\%\ \text{scavenged DPPH}^{\bullet}\ \text{at steady state} = \frac{A_0^{517} - A_{\text{sample}}^{517}}{A_0^{517}} \times 100 \qquad (2)$$

Table S1. Experimental data used for the calculation of obtained average EC_{50} values

Χρόνος Αντίδρασης: 15 min			Απορρόφηση												
	mg Δείγματος	1	2	3	Μέσος Όρος							% AA	%Inhibition		
DPPH		2.635													
A0		1.627	1.616	1.621	1.621333333										
		1	2	3		**%AA_1**	**%AA_2**	**%AA_3**	**%Inhibition_1**	**%Inhibition_2**	**%Inhibition_3**	**average %AA**	**average %inhbition**	**EC50**	**EC50 stdev**
LDH-OLE_Zn-Al_1-1	10	1.519	1.516	1.5	1.511666667	6.63798402	6.822372465	7.805777505	93.36201598	93.17762754	92.1942225	6.763980263	93.23601974	**83.64480928**	**5.452748**
	20	1.409	1.41	1.412	1.410333333	13.39889367	13.33743085	13.21450522	86.60110633	86.66256915	86.78549478	13.01398026	86.98601974	81.16237366	
	30	1.368	1.34	1.308	1.338666667	15.91886908	17.6398279	19.60663798	84.08113092	82.3601721	80.39336202	17.43421053	82.56578947	89.89707476	
	40	1.2	1.239	1.205	1.2195	26.244622	23.84757222	25.93730793	73.755378	76.15242778	74.06269207	24.78412829	75.21587171	79.87497944	
		1	2	3											
LDH-OLE_Zn-Al_2-1	10	1.511	1.532	1.544	1.529	7.12968654	5.838967425	5.101413645	92.87031346	94.16103258	94.89858636	5.694901316	94.30509868	**100.4487755**	**23.82061**
	20	1.409	1.439	1.427	1.425	13.39889367	11.55500922	12.292563	86.60110633	88.44499078	87.707437	12.109375	87.890625	123.1756757	
	30	1.377	1.391	1.392	1.386666667	15.36570375	14.50522434	14.44376152	84.63429625	85.49477566	85.55623848	14.47368421	85.52631579	75.6675063	
	40	1.321	1.312	1.297	1.31	18.80762139	19.36078672	20.28272895	81.19237861	80.63921328	79.71727105	19.20230263	80.79769737	102.5031447	
		1	2	3											
LDH-OLE_Zn-Al_3-1	10	1.542	1.571	1.572	1.561666667	5.224339275	3.44191764	3.380454825	95.8956	96.55808236	96.61954518	3.680098684	96.31990132	**207.2003567**	**31.49015**
	20	1.537	1.514	1.525	1.525333333	5.53165335	6.945298095	6.26920713	92.354	93.05470191	93.73079287	5.921052632	94.07894737	173.7701975	
	30	1.478	1.536	1.476	1.496666667	9.157959435	5.593116165	9.280885065	90.125	91.25	90.71911494	7.689144737	92.31085526	211.528021	
	40	1.401	1.444	1.478	1.441	13.89059619	11.24769514	9.157959435	87.356	89.5454	90.84204057	11.12253289	88.87746711	236.3028515	
		1	2	3											
A0		1.647	1.629	1.636	1.637333333										
OLE	10	1.561	1.556	1.55	1.555666667	4.05654579	4.363859865	4.732636755	95.94345421	95.63614014	95.26736325	4.987785016	95.01221498	**91.67455007**	**1.441226**
	20	1.452	1.478	1.467	1.465666667	10.75599262	9.157959435	9.8340504	89.24400738	90.84204057	90.1659496	10.48452769	89.51547231	90.02454418	
	30	1.379	1.387	1.383	1.383	15.24277812	14.7510756	14.99692686	84.75722188	85.2489244	85.00307314	15.53338762	84.46661238	92.31181834	
	40	1.276	1.283	1.253	1.270666667	21.57344806	21.14320836	22.98709281	78.42655194	78.85679164	77.01290719	22.39413681	77.60586319	92.68728768	

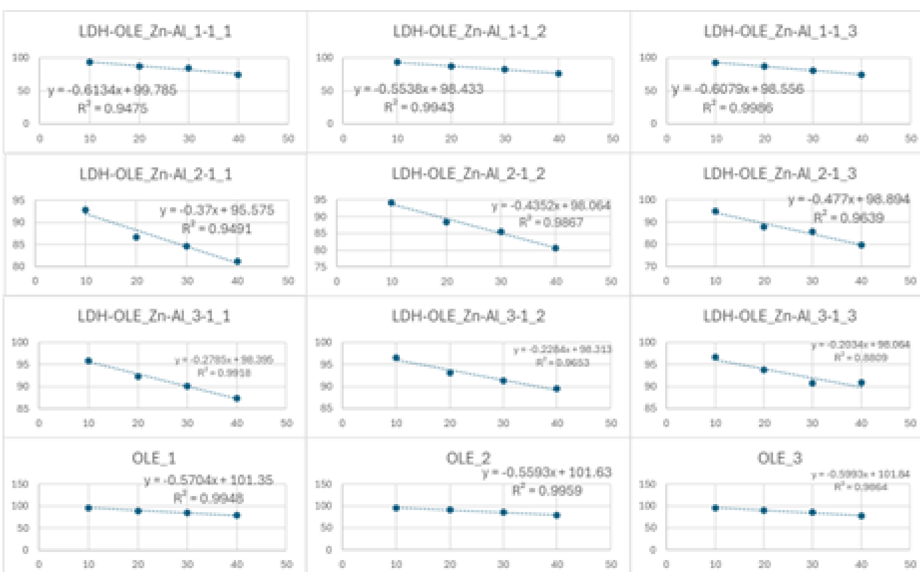
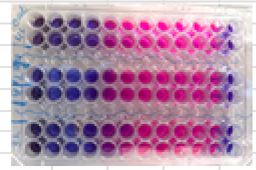


Figure S3. Linear plots used for the calculation of average values of EC_{50}

E-coli													
		LDH-OLE (mg/mL)											
		1	2	3	4	5	6	7	8	9	10	11	12
1/1	A	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	B	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	C	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	D	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
2/1	E	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	F	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	G	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
3/1	H	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	I	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media



S. aureus													
		LDH-OLE (mg/mL)											
		1	2	3	4	5	6	7	8	9	10	11	12
1/1	A	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	B	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	C	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	D	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
2/1	E	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	F	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	G	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
3/1	H	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media
	I	25.0	12.50	6.25	3.13	1.56	0.78	0.39	0.20	0.10	0.05	Culture	Media

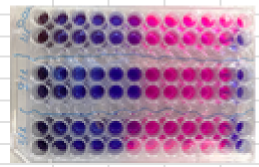


Figure S4. Results (three repetitions) to determine the minimum bactericidal concentration (MBC) of all OLE@LDH_Zn/Al_x/1 nanohybrids against E. Coli and S. Aureus. Representative images of resazurin-based 96-well plate microdilution method used to determine the minimum bactericidal concentration (MBC) of all OLE@LDH_Zn/Al_x/1 nanohybrids against *E. Coli* and *S. Aureus*.

Table S2. Statistical result of EC50 values

Descriptives

	sample_code			Statistic	Std. Error
EC50	OLE@LDH_Zn/Al_1/1	Mean		83,6448	3,14815
		95% Confidence Interval for Mean	Lower Bound	70,0994	
			Upper Bound	97,1902	
		5% Trimmed Mean		.	
		Median		81,1624	
		Variance		29,732	
		Std. Deviation		5,45275	
		Minimum		79,87	
		Maximum		89,90	
		Range		10,02	
		Interquartile Range		.	
		Skewness		1,624	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_2/1	Mean		107,0456	8,31754
		95% Confidence Interval for Mean	Lower Bound	71,2581	
			Upper Bound	142,8330	
		5% Trimmed Mean		.	
		Median		102,5031	
		Variance		207,544	
		Std. Deviation		14,40640	
		Minimum		95,46	
		Maximum		123,18	
		Range		27,72	
		Interquartile Range		.	
		Skewness		1,278	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_3/1	Mean		207,2004	18,18085
		95% Confidence Interval for Mean	Lower Bound	128,9745	
			Upper Bound	285,4262	
		5% Trimmed Mean		.	
		Median		211,5280	
		Variance		991,630	
		Std. Deviation		31,49015	
		Minimum		173,77	
		Maximum		236,30	
		Range		62,53	
		Interquartile Range		.	
		Skewness		-,607	1,225
		Kurtosis		.	.
	OLE	Mean		91,6746	,83209
		95% Confidence Interval for Mean	Lower Bound	88,0943	
			Upper Bound	95,2548	
		5% Trimmed Mean		.	
		Median		92,3118	
		Variance		2,077	
		Std. Deviation		1,44123	
		Minimum		90,02	
		Maximum		92,69	
		Range		2,66	
		Interquartile Range		.	
		Skewness		-1,601	1,225
		Kurtosis		.	.

Multiple Comparisons

Dependent Variable: EC50
Tukey HSD

(I) sample_code	(J) sample_code	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound
OLE@LDH_Zn/Al_1/1	OLE@LDH_Zn/Al_2/1	-23,40075	14,32355	,414	-69,2698
	OLE@LDH_Zn/Al_3/1	-123,55555*	14,32355	<.001	-169,4246
	OLE	-8,02974	14,32355	,941	-53,8988
OLE@LDH_Zn/Al_2/1	OLE@LDH_Zn/Al_1/1	23,40075	14,32355	,414	-22,4683
	OLE@LDH_Zn/Al_3/1	-100,15479*	14,32355	<.001	-146,0238
	OLE	15,37101	14,32355	,714	-30,4980
OLE@LDH_Zn/Al_3/1	OLE@LDH_Zn/Al_1/1	123,55555*	14,32355	<.001	77,6865
	OLE@LDH_Zn/Al_2/1	100,15479*	14,32355	<.001	54,2858
	OLE	115,52581*	14,32355	<.001	69,6568
OLE	OLE@LDH_Zn/Al_1/1	8,02974	14,32355	,941	-37,8393
	OLE@LDH_Zn/Al_2/1	-15,37101	14,32355	,714	-61,2400
	OLE@LDH_Zn/Al_3/1	-115,52581*	14,32355	<.001	-161,3948

Table S3. Statistical result of TPC values

Descriptives

	sample_code			Statistic	Std. Error
TPC_pH7	OLE@LDH_Zn/Al_1/1	Mean		21,6296	3,12766
		95% Confidence Interval for Mean	Lower Bound	8,1724	
			Upper Bound	35,0868	
		5% Trimmed Mean		.	
		Median		19,2222	
		Variance		29,347	
		Std. Deviation		5,41726	
		Minimum		17,83	
		Maximum		27,83	
		Range		10,00	
		Interquartile Range		.	
		Skewness		1,605	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_2/1	Mean		23,8519	2,82521
		95% Confidence Interval for Mean	Lower Bound	11,6959	
			Upper Bound	36,0078	
		5% Trimmed Mean		.	
		Median		21,1667	

		Variance		23,945	
		Std. Deviation		4,89341	
		Minimum		20,89	
		Maximum		29,50	
		Range		8,61	
		Interquartile Range		.	
		Skewness		1,726	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_3/1	Mean		28,5741	4,78534
		95% Confidence Interval for Mean	Lower Bound	7,9844	
			Upper Bound	49,1637	
		5% Trimmed Mean		.	
		Median		24,5000	
		Variance		68,699	
		Std. Deviation		8,28846	
		Minimum		23,11	
		Maximum		38,11	
		Range		15,00	
		Interquartile Range		.	
		Skewness		1,677	1,225
		Kurtosis		.	.
	OLE	Mean		646,4444	1,60375
		95% Confidence Interval for Mean	Lower Bound	639,5441	
			Upper Bound	653,3448	
		5% Trimmed Mean		.	
		Median		646,4444	
		Variance		7,716	
		Std. Deviation		2,77778	
		Minimum		643,67	
		Maximum		649,22	
		Range		5,56	
		Interquartile Range		.	
		Skewness		,000	1,225
		Kurtosis		.	.
TPC_pH3.6	OLE@LDH_Zn/Al_1/1	Mean		25,0556	,57824
		95% Confidence Interval for Mean	Lower Bound	22,5676	
			Upper Bound	27,5435	
		5% Trimmed Mean		.	

		Median		24,7778	
		Variance		1,003	
		Std. Deviation		1,00154	
		Minimum		24,22	
		Maximum		26,17	
		Range		1,94	
		Interquartile Range		.	
		Skewness		1,152	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_2/1	Mean		40,1481	1,06783
		95% Confidence Interval for Mean	Lower Bound	35,5536	
			Upper Bound	44,7426	
		5% Trimmed Mean		.	
		Median		40,6111	
		Variance		3,421	
		Std. Deviation		1,84954	
		Minimum		38,11	
		Maximum		41,72	
		Range		3,61	
		Interquartile Range		.	
		Skewness		-1,056	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_3/1	Mean		22,7407	,37037
		95% Confidence Interval for Mean	Lower Bound	21,1472	
			Upper Bound	24,3343	
		5% Trimmed Mean		.	
		Median		23,1111	
		Variance		,412	
		Std. Deviation		,64150	
		Minimum		22,00	
		Maximum		23,11	
		Range		1,11	
		Interquartile Range		.	
		Skewness		-1,732	1,225
		Kurtosis		.	.
	OLE	Mean		643,6667	1,60375
		95% Confidence Interval for Mean	Lower Bound	636,7663	
			Upper Bound	650,5670	

		5% Trimmed Mean		.	
		Median		643,6667	
		Variance		7,716	
		Std. Deviation		2,77778	
		Minimum		640,89	
		Maximum		646,44	
		Range		5,56	
		Interquartile Range		.	
		Skewness		,000	1,225
		Kurtosis		.	.
TPC_pH1	OLE@LDH_Zn/Al_1/1	Mean		606,6296	4,03602
		95% Confidence Interval for Mean	Lower Bound	589,2640	
			Upper Bound	623,9952	
		5% Trimmed Mean		.	
		Median		607,5556	
		Variance		48,868	
		Std. Deviation		6,99059	
		Minimum		599,22	
		Maximum		613,11	
		Range		13,89	
		Interquartile Range		.	
		Skewness		-,586	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_2/1	Mean		232,0926	4,34594
		95% Confidence Interval for Mean	Lower Bound	213,3935	
			Upper Bound	250,7917	
		5% Trimmed Mean		.	
		Median		232,8333	
		Variance		56,662	
		Std. Deviation		7,52738	
		Minimum		224,22	
		Maximum		239,22	
		Range		15,00	
		Interquartile Range		.	
		Skewness		-,439	1,225
		Kurtosis		.	.
	OLE@LDH_Zn/Al_3/1	Mean		186,9074	8,81966
		95% Confidence Interval for Mean	Lower Bound	148,9595	

			Upper Bound	224,8553	
		5% Trimmed Mean		.	
		Median		181,1667	
		Variance		233,359	
		Std. Deviation		15,27609	
		Minimum		175,33	
		Maximum		204,22	
		Range		28,89	
		Interquartile Range		.	
		Skewness		1,452	1,225
		Kurtosis		.	.
	OLE	Mean		634,4074	2,44977
		95% Confidence Interval for Mean	Lower Bound	623,8669	
			Upper Bound	644,9479	
		5% Trimmed Mean		.	
		Median		635,3333	
		Variance		18,004	
		Std. Deviation		4,24313	
		Minimum		629,78	
		Maximum		638,11	
		Range		8,33	
		Interquartile Range		.	
		Skewness		-,935	1,225
		Kurtosis		.	.

Multiple Comparisons

Tukey HSD

Dependent Variable	(I) sample_code	(J) sample_code	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
TPC_pH1	OLE@LDH_Zn/Al_1/1	OLE@LDH_Zn/Al_2/1	374,53704*	7,71247	<.001	349,8390	399,2351
		OLE@LDH_Zn/Al_3/1	419,72222*	7,71247	<.001	395,0242	444,4203
		OLE	-27,77778*	7,71247	,029	-52,4758	-3,0797
	OLE@LDH_Zn/Al_2/1	OLE@LDH_Zn/Al_1/1	-374,53704*	7,71247	<.001	-399,2351	-349,8390
		OLE@LDH_Zn/Al_3/1	45,18519*	7,71247	,002	20,4871	69,8832
		OLE	-402,31481*	7,71247	<.001	-427,0129	-377,6168

	OLE@LDH_Zn/Al_3/1	OLE@LDH_Zn/Al_1/1	-419,72222*	7,71247	<.001	-444,4203	-395,0242
		OLE@LDH_Zn/Al_2/1	-45,18519*	7,71247	,002	-69,8832	-20,4871
		OLE	-447,50000*	7,71247	<.001	-472,1980	-422,8020
	OLE	OLE@LDH_Zn/Al_1/1	27,77778*	7,71247	,029	3,0797	52,4758
		OLE@LDH_Zn/Al_2/1	402,31481*	7,71247	<.001	377,6168	427,0129
		OLE@LDH_Zn/Al_3/1	447,50000*	7,71247	<.001	422,8020	472,1980
TPC_pH3.6	OLE@LDH_Zn/Al_1/1	OLE@LDH_Zn/Al_2/1	-15,09259*	1,44634	<.001	-19,7243	-10,4609
		OLE@LDH_Zn/Al_3/1	2,31481	1,44634	,430	-2,3169	6,9465
		OLE	-618,61111*	1,44634	<.001	-623,2428	-613,9794
	OLE@LDH_Zn/Al_2/1	OLE@LDH_Zn/Al_1/1	15,09259*	1,44634	<.001	10,4609	19,7243
		OLE@LDH_Zn/Al_3/1	17,40741*	1,44634	<.001	12,7757	22,0391
		OLE	-603,51852*	1,44634	<.001	-608,1502	-598,8868
	OLE@LDH_Zn/Al_3/1	OLE@LDH_Zn/Al_1/1	-2,31481	1,44634	,430	-6,9465	2,3169
		OLE@LDH_Zn/Al_2/1	-17,40741*	1,44634	<.001	-22,0391	-12,7757
		OLE	-620,92593*	1,44634	<.001	-625,5576	-616,2942
	OLE	OLE@LDH_Zn/Al_1/1	618,61111*	1,44634	<.001	613,9794	623,2428
		OLE@LDH_Zn/Al_2/1	603,51852*	1,44634	<.001	598,8868	608,1502
		OLE@LDH_Zn/Al_3/1	620,92593*	1,44634	<.001	616,2942	625,5576
TPC_pH7	OLE@LDH_Zn/Al_1/1	OLE@LDH_Zn/Al_2/1	-2,22222	4,64949	,962	-17,1115	12,6671
		OLE@LDH_Zn/Al_3/1	-6,94444	4,64949	,483	-21,8338	7,9449
		OLE	-624,81481*	4,64949	<.001	-639,7041	-609,9255
	OLE@LDH_Zn/Al_2/1	OLE@LDH_Zn/Al_1/1	2,22222	4,64949	,962	-12,6671	17,1115
		OLE@LDH_Zn/Al_3/1	-4,72222	4,64949	,745	-19,6115	10,1671
		OLE	-622,59259*	4,64949	<.001	-637,4819	-607,7033
	OLE@LDH_Zn/Al_3/1	OLE@LDH_Zn/Al_1/1	6,94444	4,64949	,483	-7,9449	21,8338
		OLE@LDH_Zn/Al_2/1	4,72222	4,64949	,745	-10,1671	19,6115
		OLE	-617,87037*	4,64949	<.001	-632,7597	-602,9811
	OLE	OLE@LDH_Zn/Al_1/1	624,81481*	4,64949	<.001	609,9255	639,7041
		OLE@LDH_Zn/Al_2/1	622,59259*	4,64949	<.001	607,7033	637,4819
		OLE@LDH_Zn/Al_3/1	617,87037*	4,64949	<.001	602,9811	632,7597

*. The mean difference is significant at the 0.05 level.

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