in vitro/in vivo	Type of assay	Reference authors_year	Evaluation by EFSA or SCCS	Test system/Test object	Exposure conditions (concentration/duration/metabolic activation)	TiO2 material tested	Test substance	Information on the characteristics of the test substance	Presence of nanofraction in fine TiO2 proved/possible	Cellular uptake	tesults	Route of exposure	Genotoxicity result	Reliability/comments	Relevance (for EFSA data of only high o limited relevance taken)	Crystalline Phase r	Shape of Particle	Particle size, nominal particle Particle si size given by manufacturer suthors o (size range/ distribution) [sm] [size rang	ze measured by the Aspect ratio f the publication value (SD) #/ distribution)	Crystal structure, ratio Specific Surface area of anatase/rutile [m2/g] by BET method	Nydrodynamic diameter (nm) by DLS in distilled water	Nydrodynamic diameter (nm) by DLS, in saline, culture media, etc.	Zeta-potential [mV] at pH 7 in distilled water	Zeta-potential [mV] In saline, culture media	olydispenity index Polydispenity index (Pd) 1 distilled water in saline, culture medium	Chemical Purity of Sc composition of particles (%) C particles	rface ch sating
in vitro	Micronucleus best in vitro	Unal et al., 2021	803	Peripheral blood mononuclear cells haman	type of assay: micronucleus test	NO INFORMATION ON GRYSTALLINE FORM - THE STUDY NOT ANALYSED	Authon: TrO2 nanopowder, <100 nm (b21) from Sigma Addich No INICIDAKITON COI CITSTALLINE FOM- The study not analysed TOM- the study not analysed There are 2 products from Sigma will emiller description: a 433465 Transana/IV) acide, molisi 100 nm particle study (200 cite), molisi 200 nm particle study (200 cite), m	m th ure					Study not analysed	4 NO INFORMATION ON CIRSTALINE FORM - the stud not analysed	LOW	NO INFORMATION ON CRESTALLINE FORM - the study not analysed											
in vitro	Chromosomal aberration test in vitro	Unal et al., 2021	5005	Peripheral blood mononuclear cells	type of assay: chromosomal aberration assay	NO INFORMATION ON CRYSTALLINE FORM -	nanopowder, <100 nm particle size, 29.5% trace metals basis N Authors: TiO2 nanopowder, <100 nm (BET) from Sigma-Aldrich	m Suspension stability:					Study not analysed	4 NO INFORMATION ON	LOW	NO INFORMATION ON CRYSTALLINE FORM - the study											
in vitro	Comet in vitro	Ghosh et al., 2010	\$03	human Perpheral blood mononuclear cells	type of assay: const in vitro	THE STUDY NOT ANALYSED NO INFORMATION OR CRYSTALINE FORM	NO INFORMATION ON CRISTALLINE COMM - the study not analysed There are 2 products from Sigma with wiral and description: a 6.834602 Transium[V] oxide, mixit of rutile and anatase, nanopounder, -2000 rms particle size (2017) 0.9352 trace metals basis -2005 trace metals basis -2005 trace metals basis -1002 MK (CAS No. 13463 6-77) from -1002 KK (CAS NO. 13463 6-77) fr	n, Suppression stability:					Study not analysed	CINSTALUNE FORM - the stud not analysed 4 NO INFORMATION ON	v LOW	ND ANOMATION ON CRISTALINE FORM- the study											
						ANALYSED	FOR5A -the study not analysed	Sonication: Appropriate amount of T102 nanoparticles were supported in fifter strictized double distilled water and were soricitated to prepare stock solutions. Working solutions were made b serial distors, followed by soricitation and vigonous vortexing a unit when resourced	r V					not analysed													
				and Banggunine DAA giyongkan kandata mise (fogg2-/- KC)	regard lates in the space approximation term stars β_{1}/β_{2} approximation term stars β_{2}/β_{2} and the space stars β_{2}/β_{2} and the space stars β_{2}/β_{2} and the space stars β_{2}/β_{2} and the space stars β_{2}/β_{2} and $\beta_{2}/\beta_{2}/\beta_{2}$ and $\beta_{2}/\beta_{2}/\beta_{2}$ and β_{2}/β_{2	CHYSTALINE FORM AND INSUMPLENT METHODOLOGY BEISOPPTION THE STUDY NOT ANALYSE STUDY NOT ANALYSE M	Commission Joint Research Center ND Information on the crystal form i the paper	diagramed in diff20(2)20 54/30 (2) PRIsin IRL: 11 and a significant of multiple IRL: Inc. 11 and 11 and 12 and 1	L.		ng sandt meganisa kan sa kan sa Kan sa kan	Envery (MTT)	regulate	navallient methodology dencription; not clare how many cells was not solved at any cells was not solved at feld; no proof of internativatio	ρα m	CRISTALINE FORM - the study not analysed				CHYSTALINE FORMA- INE STORY MOT ANALYSTD							
is vitro	Connet in vitro	Asare et al., 2012	5005	httels-a (d. 1947) Interne pårupsteri Intiticular entrypnal earchoma	dahi Mengahan Sharahara dan Sahahara dan Serapat dan sebagai dan	NO INFORMATION ON CHISTALLINE FORM AND THE CONTRACT OF THE INFORMATION OF THE DESCRIPTION - THE STUDY NOT ANALYSES of d	N IGCIAN, Som de chargean Commission Joint Research Center No Information on the crystal form I on pager	Assemble addition for some dispersed in offsty form some address, as provide detection of anyther index, as provide detection address, as provide detection that any address and address address and a flucture in address and address and a flucture in address address and a flucture in address and a flucture in address and a flucture in address address, address a	L	not reported	ny dahido di increase et any cances multi ngatawa (-ing multi fag patawa candu) syntanicity: en change RDz: RDz: Marcallustion:	ntration : NO	Negative	2 insulfiers methodology description; out clear how many cells were analysed; sig increases in DMA were analysed; faid; no proof of international of the proof of international	be n	No neodonantes can Carstratular for Collar - the study not analysed		83		In an analysis of the second o							
in vitro	Convet in vitro	Tao et al., 2018	SCCS	1. HL.7702 Tudio hospital (normal 2. Hospital) 2. Hospital Human hypotocellular arcinoma cella	Addamtion of the sector spectra sector of the sector spectra secto	NOT RELEVANT TIO2 FORM TESTED - THE STUDY NOT ANNUYSE REP	b) a weater type macromodulation and the single strategy biological wave to pulpyrment in macromodulation of macromodulation and the single strategy and the macromodulation and the single strategy and the macromodulation and the single strategy and the macromodulation and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strategy and the single strateg	ne 2 3 3 99					Study not analysed	4 Ol-I-water type noncentrability and the water type noncentrability of the type polypered with TO2 was use	n d	Tutur Net Makaten - oliv- water type neuromakin lasting Gridge bitkale lowes polyprend with TIO2 was used	sphencal with integrate surface: SEM, TEM	Toto (purpus, - 3-20 m was) - 42 water (purpus) - 42 water (purpus		onna						102 and/alian ethic packs attibus encoder, aktroam, faite acid, aktroam	
in vitro	Comet in vitro	Unal et al., 2021	803	Peripheral blood mononuclear cells human	Entertraphones) was careful out at 12 V for 20 Entertraphone consoletations analysis to at 4 °C. 20 coll and consoletations analysis type of assays alkaline conset assay	Id NO INFORMATION ON CRISTALLINE FORM- THE STUDY NOT AMALYSED	N Authors: TIO2 narrsponder, <100 nr (2017) from Sigma-Addich NO INFORMATION ON CINSTALLINE COMM - the study not analyzed Three are 2 products from Sigma will verifare description: 1. #53462 Titanampi/y outo, mith of rotife and analanampi/y outo, mith anapower, <100 nm particle size, 2505 trace mithelia bain.	n : : : : : :					Study not analysed	4 NO INFORMATION ON CRISTALLINE FORM - the stud not analyzed	low Y	NO INFORMATION ON CRISTALLINE FORM - the study not analysed											
in vitro	endpoints in vitro - gene expression	Pati et al., 2016	8.65	Mittos Human lung fibroblasts	type or assay: goosi Univ, methysioon	METHODOLOGY DESCRIPTION - THE STUDY NOT ANALYSEE	India) NO DATA on the physicochemical D characteristics - the study not	instruments, Boynton Beach, FL USA).					analysed	4 NO DATA ON PHYSICOCHEMICAL ANALYSIS THE NPs - the study not	CP CP	PHYSICOCHEMICAL ANALYSIS - the study not analysed											
in vitro	Comet in vitro	Zhu et al., 2020	5003	1KS human lymphoblast cells	type of assay: in vitro cornet assay	NO INFORMATION ON CRYSTALLINE FORM - THE STUDY NOT	analysed N TIO2 NPs from Nanjing Xianfeng Nan Material Technology Co., Ltd NO INFORMATION ON ORYSTALLINE	no Suspension stability:					Study not analysed	enalysed 4 NO INFORMATION ON CRISTALLINE FORM - the stud	Low	NO INFORMATION ON CRYSTALLINE FORM - the study not analysed				NO INFORMATION ON CRYSTALLINE FORM - THE STUDY NOT							
in vitro	Other genotoxicity	Zhu et al., 2020	\$005	TKS	type of assay: PIG-A assay	ANALYSED NO INFORMATION ON	FORM - the study not analysed N TIO2 NPs from Nanjing Xianfeng Nar Material Technology Co. 14d	Sonication: no Suspension stability:					Study not	not analysed	Low	NO INFORMATION ON				ANALYSED NO INFORMATION ON							
				naman grup noass, cas		THE STUDY NOT ANALYSED	NO INFORMATION ON CRYSTALLINE FORM - the study not analysed	Cell internalisation :					an an group	CRYSTALUNE FORM - the stud not analysed	ly .	not analysed				THE STUDY NOT ANALYSED							
in vitro	Other genotoxicity endpoints in vitro - Sater Chromatid Exchanges	Unal et al., 2021 Sherin et al., 2017	803	Peripheral blood enconsultar cells haman Peripheral blood	type of assay: Sister Overnatis Dohange	NO INDEMATION OF CRYSTALINE FORM - THE STUDY NOT ANALYSED	4 kultion: TD2 nanopowier, c100 nn kultion: TD2 nanopowier, c100 nn klT1 (nn: Signa-Aldich NO INFORMATION ON CITSTALLINE CIOM- the subject on the subject instance of the subject of the subject of the subject of the subject of the subject of the subject of th	m th une R, The crystalline phase was				Study rot analy	Study not analysed	4 NO INFORMATION ON CRISTALINE FORM - the stud not analysed	Low Low	NO INFORMATION ON CHISTALUER COM- the study not analysed				MANY STATUS							
				mononuclear cells rats		DESCRIPTION OF STUDY DESIGN DETAILS - THE STUDY NOT ANALYSED	isopropoxide (Sigma Aldrich)	analyzed by X-ray diffraction (XRD)					analysed	Lack of description of basic study design details													
in vitro	Micronucleus lent in vitro	Or Giampaolo et al., 2021	xcs	Pergheral blood mononuclear cells tuman	Samparticles Managenesa alica nonquericia Monitore en primaria tecnoprisaria (JL 2014) galadiane stanto (JL 4, 2017) galadiane stanto (JL 4, 2017) distantos (JL	INCUMPICIANT METHODOLOGY DISCRIPTION - THE STUDY NOT ANALYSEE	NDAC, ICO-320 mm, ondered powe, Newagonal symmetry, pore lost 3 mm	September stability: " Ord Internalisation: Sentration: not reported	SO2/TO2 ratio experimentally determined (10.8)	net reported	ing statistical increases at any concern sequent factor of the area sequences in sequences for 25 scales, or 472 scales, or 472 scales, hyper brokeness, the factor of the shown's possible controls not repor- secular for parables controls not repor- secular for parables controls not repor- regional scales, and the factor of the application of the sequences region any control of the factor of the sequences region any control of the factor of the sequences region any control of the sequences region of the difference of the sequences region of the difference of the sequences region of the difference of the sequences of the sequences of the difference of the sequences of the difference of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequences of the difference of the sequence of the difference of the d	Instantials: the samples general not read doses (30 tive 6 and 26h	Study not analysed	A Door description of mathodology, frequency of M not shown	Low n	MAN											
in vitro	Obar genetauicity andpoints in vitro - nuclear morphology	Dr Giampaolo et al., 2021	\$63	Pergheral blood mononuclear cells human	exequentidate P23 1021 MP, type of assay a result enclosed by type of assay a result enclosed by technical lines, e. 3, e. 3, 25, 3 concentrations, e. 3, 2, 5, 51, 50 (20) and the second second second by the second biological enclosed by the second second enclosed by the second second second second enclosed by the second second second second enclosed by the second second second second Additional measurements, spoplant, restrict engine sects (ICO), and cytalizes secretion	ROLFFICENT MTHORODOLOGY DISOFFICIAN THE STUDY NOT ANALYSEE	P25 1903 MPs, seature, study rolt analysed D	Songernisen stability: Cell internalisation: Sonication: not reported		kit reported	in the second se	the samples (MAD), with a general not read down (SD) ne responses	Study not analysed	A Poor description of mathodology, frequency of M not shown	Low	indaw		S (dan m	(down)								
in vitro	Convet in vitro	hu et al., 2020	505	nter-1 renoroste -macrophage human leukemia cella	exceptions: Altern the 51 (401) labeled Thrown disade management (a more To 24 May thrown disade management) (a more To 24 May and the second second second second second second patientse: The second second second second second second second 50 mic. The second second second second second second patientse: The second second second second second second second 50 mic. The second second second second second second patientse: The second second second second second second second patientse: The second Additional measurements: mRNAs segrenciar MdRisonal measurements: mRNAs segrenciar	NOT ALLEVANT TOZ 1. TORM TESTED - THE 1. STUDY NOT ANALYSEE d	INCO TWN, wnotane, Lieberde et Mr. Marzen fred 5 (none DA 248), with D primary nanogartick diameter beloe 23 nm (Digno-Aldrich Corp. UA)	Support Cell Internalisation Sonication: not reported		not reported	Inty distillation forcesses at any concession, age mi-1 of neuron 2024 ASS was able to provide the provide the approximation of the property of the provide concentration of agenticant result; positive result; positive Soft; Internationation	entrelation 500 to londoon rransa at every and motral also were	Positive	2 on guideline, but methodolog sound	l low	Annane, KP skalend with Altarin Rod Skale primary nanoparticle distribution for the state in Signa Aktinic Comp. USA - end syncit analysed		-25 m			43.49 z 12.26 (5 mg/mi, 16855)		-1223 ± 119 (5 mg/mL, HIISO)				

n of	Purity of particles [%]	Surface chemistry Coating	Impurities of concern	Other
on with extract, lic acid,				
				-

in solution	Contract in volum	Follow et al. 3033	Managhanatas	assessmential are TrO3	NO INFORMATION O	TOTA ND: continuing much mine	Former and the stability	1	and considered	and distribution in an an an and the little of the second statements of	thinks and	Elevela and	5	1	NO INFORMATION ON	1.1		I I		I I	13.07		1
		2010 CC	(infrance) in a	type of assay: comet assay in vivo	CRYSTALLINE FORM -	Stanium tetra isoproposide and	Cell internalisation:		inos reportoro	any manifest increase at any concentration . yes	analysed	analysed	clear toxic effetcs in liver after		CRYSTALLINE FORM - the study						- 44,07		
				guideline: none	THE STUDY NOT	orange peel extract.				result: positive in liver, only one dose tested			ingestion		not analysed								
				treatment time: treated daily by the oral gavage	R ANALYSED		Sonication: not reported			TIO2- NPs disturb the hepatic and renal functions													
				for 21 days						and the maintain and the set of the													
				me/ke b.w						result for positive control. Instreported													
				FBS serum: NA						cytotoxicity:													
				59 mix: NA																			
				biological medium for NPs dispersion:						ROS:													
				cytotoxicity assessment:																			
				methodology: to evaluate the reliation damage						use:													
				genotoxicity, and DNA damage in the liver of ra	ts .					internalisation:													
				treated with titanium nanoparticles and to																			
				estimate the protective role of holy basil						pro-inflammatory response: marked elevation (p	<												
				statistics: manager analysis of variance (ANCVA						DUSJINAPP, CEA, and INI-d.													
				followed by Duncan's multiple comparisons tes	*																		
				Additional measurements: Gene Expression																			
				Analysis, apoptosis, biochemical parameters,																			
in when	Chromosomal abarration	Salman et al. 2021 SCCS	1 Bone marmar cells	histopathology	NO INFORMATION O	N TIO2 NPs from blowerthesis using	Supervise stability	not reported	not reported	any statistical increase at any concentration - Yes	Sturks not	Shudy not	1	100	NO INFORMATION ON	irrender 28.9					.1197		
	test in vivo		2. Spermatocytes	type of assay: Chromosomal aberration in vivo	CRYSTALLINE FORM -	Aloe vera extract	Cell internalisation :			only one dose tested	analysed	analysed	- Methodology poorly described		CRYSTALLINE FORM - the study								
				guideline: none	THE STUDY NOT								and not according to OECD		not analysed								
				treatment time: Balb/c mice treated orally for 2	3 ANALYSED		Sonication: not reported			result: significant increase in chromosomal			recommendations										
				weeks					1 1	aderrations in bone marrow cells (which reached													
				FBS server: NA						fragmentation, break, gap plus break, and gap													
				59 mix: NA						plus break or fragmentation) and in													
				biological medium for NPs dispersion : water						spermatocytes													
				cytotoxicity assessment:						secult fee and the sector is not constant													
				methodology: to evaluate the potential						result to positive control. net reported													
				protective role of encapsulated cinnamon oil						cytotoxicity:													
				(ECO) against TiO2NP-induced oxidative stress,																			
				DNA damage, chromosomal aberration, and						ROS: In liver and kidney tissues TiO2NPs													
				Chromosomal aberration in bone marrow and																			
				sperm morphology and chromosome aberration	ns					GSH:													
				assay in germ cells (Note that only 100																			
				475 at least 200 metanhaues should be analyse	4					internalisation:													
				for each animal)	-					pro-inflammatory response:													
				statistics:																			
				Additional measurements: liver and kidney																			
				markers in liver and kidney, sperm abnormalitie	-																		
in vivo	Other emotoxicity	Abdel-Wahhab et al., 20 SCCS	Sprague-Dawley male	ats nanoparticles: TIO2-NPs, encapsulation - theme	NO INFORMATION O	N TIO2 NPs, newly synthesized from	Average size: 45 nm. zeta		not reported	TIO2-NPs administration disturbs the liver and	oral, stomach	No errotoxicity	4	Low	NO INFORMATION ON	tetraronal in house	a synthetized NPs 45			10-90 nm (DLS)	-27.34		
1	endpoints in vivo – gene			essential oil (ETEO)	CRYSTALLINE FORM	titanium tetra isoproposide (TTIP)	potential: -27.34 mV	1		kidney markers, lipid profile, cytokines, oxidative	tube	test used	NO DATA ON	1	CRYSTALLINE FORM - the study					1 1			1
	expression			type of assay: gene expression	THE STUDY NOT	using the extract from peel of orange	e No sonication used			stress parameters, the apoptotic and antioxidant			PHYSICOCHEMICAL ANALYSIS O	e	not analysed								
				guideline:	ANALYSED					hepatic mRNA expression, and induced initialization of expressions in the lines and hideau			THE NPs - only size distribution										
				days including the control errors TIO2-NPs (300	10					Installing the attentions in the liver and kidney			and snape										
				mg/kg b.w)-treated group, ETEO at low (50 mg/	hg.																		
				b.w) or high dose (100 mg/kg b.w)-treated																			
				groups, and TiO2-NPs plus ETEO at the two dos	es-																		
				treate groups treatment medium for NPs dispersion																			
				toxicity assessment: clinical oservation,																			
				biochemical parameters, histochemistry																			
				negative control: Control rats - distilled water																			
				methodologic the rate ware divided into 5																			
				groups (10 rats/group) and were treated orally																			
				using stomach tube for 30 days as follows: grou	φ																		
				1, normal control received distilled water; group	P																		
				2, rats treated with TiO2-NPs (300 mg/kg b.w) is																			
				ion aqueous solution; group 3, rats treated with																			
				rats treated with high dose (HD) of ETEO (100																			
				mg/kg b.w]; and groups 5 and 6, rats treated wi	ith																		
				LD or HD of ETEO plus TIO2-NPs. gene expression	on:																		
a siles	Compatible office	Dissipation at al 1033	Desire dented linear out o	R1-PCR (genes - GAPOR, 27-SUD, CAT, GPX, BAD	NANOMATERIAL	NANCMATERIAL	TOT NO. (NOT BY 31 are minut	Toronanaian stability		The excitate could be detected in cell coulous of	any statistical	-	Vacation		law.	NO INFORMATION ON	11	20 50 0	NO INFORMATION ON				
	Connectini Will G	Commercial, 2022	with lentiviral sene	type of assay; alkaline correct assay (more detail	ih:		particle size) from Siema-Aldrich	h.		the cells	increase at any		unforme	-		CRYSTALLINE FORM -		part)	CRYSTALUNE FORM - THE				
			transfer of human	doi.org/10.1016/j.dental.2015.03.017)			Steinheim, Germany	Cell internalisation : by laser			concentration:			no information on crystalline		THE STUDY NOT		99% of the TiO2-	STUDY NOT ANALYSED				
			telomerase reverse	guideline:				scanning confocal			YES, but very			phase, extremely high		ANALYSED		NPs were below					
			transcriptase (PDL-hTE	treatment time: 24 h				microscopy (LSCM).			small and only at	t		concentrations used, no data				100 nm					
			details: DOI:	F05 serum: 10%				0.381 or 0.762 un/mL			tested			methodology of determining									
			10.22203/eCM.v019a3	2 59 mix:				For each experiment about			concentration of	F		cell internalisation of lower									
				biological medium for NPs dispersion : VLE (ver	ry			40 cells were investigated			1535 ug/mL,			reliability									
				low endotoxin) Dubecco's Minimum Essential				and the experiment was			and the second have												
				supplemented with 1% pericilin/streptomycin				repeated a trives (ii - a).			resar. negative												
				and 10% Fetal Bovine Serum				Sonication:			result for positiv	re											
				cytotoxicity assessment: XTT reduction test (24	1h						control: ltx												
				in the 96-well plate): 1500, 4500, 15,000, 45,00 150,000, 450,000 unimi	0,						increase												
				positive control: MMS 100 uM							cytotaxicity: no												
				methodology: Before the cornet assay was							change												
				performed, the cells were stained with trypan							101-												
				exposure was set at 75% viable cells. Software																			
				program cornet assay II (Perceptive							GSH:	1											1
in vitro	Cornet in vitro	Dhein et al., 2022 SCCS	Periodontal ligament o	Is nanoparticles: TiO2 pigmentary	PIGMENTARY GRAD	FIGMENTARY GRADE other than	TiO2 pigmentary, (299%, -325	Suspension stability:	possible	The particles could be detected in cell nucleus of	any statistical	1 -	Negative	3	Low	NO INFORMATION ON	s45000 (325 m	1) ASTM E11 50-200 (for 88% of	NO INFORMATION ON	1 1			1 -
1	1	1	transfer of human	doi.org/10.1016/j.dental.2015.03.017j	equivalent or E171-		Adrich, Steinheim, Germany	Cell internalisation : he laser		Contra Calence	concentration	1	1	no information on crystalline	1	THE STUDY NOT		Only 4% of the	STUDY NOT ANALYSIN	1 1		1 1	1
1			telomerase reverse	guideline:	arrear.	1	a contraction of the second	scanning confocal			NO	1		phase, extremely high	1	ANALYSED		particles were		1 1			1
1	1	1	transcriptase (PDL-hTE	treatment time: 24 h		1	1	microscopy (LSCM).				1	1	concentrations used, no data	1			larger than 200	1	1 1		1 1	1
1	1	1	cells)	concentrations: 9164, 1833, 916, 458 ug/mL		1	1	Cells exposed for 24 h to			result: negative	1	1	on suspension stability,	1			nm and 8%	1	1 1		1 1	1
1			10.22203/eCM.v019+1	2 59 mix:	1	1	1	For each experiment aband			result for position	~	1	cell internalisation of lower	1			smaller than 50 nm.		1 1			1
1	1	1		biological medium for NPs dispersion : VLE (ver	ry .	1	1	40 cells were investigated			control: 8x	1	1	reliability	1				1	1 1		1 1	1
1	1	1	1	low endotoxin) Dulbecco's Minimum Essential		1	1	and the experiment was			increase	1	1	1	1				1	1 1		1 1	1
1	1	1	1	metrum (MEM) with 4.5 g/I D-Glacose was surplemented with 1% nenicilla (metro-		1	1	repeated 3 times (n = 3).			odatosicitor	1	1	1	1				1	1 1		1 1	1
1	1	1	1	and 10% Fetal Bovine Serum		1	1	Sonication:			change	1	1	1	1				1	1 1		1 1	1
1				cytotoxicity assessment: XTT reduction test (24	1 h	1	1	1			L	1	1	1	1					1 1			1
1				in the 96-well plate): 20,000 30,000 100,000 300,000 1,000,000 un/rel	1	1	1	1			ROS:	1		1	1	1			1	1 1			1
1	1	1	1	positive control: MMS 100 uM		1	1				GSH:	1	1	1	1				1	1 1		1 1	1
1	1	1	1	methodology: Before the cornet assay was		1	1					1	1	1	1				1	1 1		1 1	1
1	1	1	1	performed, the cells were stained with trypan		1	1				internalisation:	1	1	1	1				1	1 1		1 1	1
1				exposure was set at 75% viable rolls. Software	1	1	1	1			one particles could he	1		1	1	1			1	1 1			1
1	1	1	1	program cornet assay II (Perceptive		1	1				detected in cell	1	1	1	1				1	1 1		1 1	1
in vitro	Micronucleus test in vitro	Wang et al., 2007 EFSA			NANOMATERIAL	no information (EFSA)	TiO2 NPs, no information (EFSA)	0				1	Positive	EFSA	EFSA	no information (EFSA)	to information	rsa)	no information (EFSA)				
in vitro	Micronucleus test in vitro	Turkez and Geytkoglu, 20175A		1	NANOMATERIAL	no information (EFSA)	TiO2 NPs, no information (EFSA)	ð .				1	Positive	CFSA	EFSA	no information (EFSA)	to information	rsa)	no information (EFSA)				1
in vitro	Micronucleus test in vitro	us virgino et al. 2020 EFSA Wane et al., 2018 FESA	-		NANOMATERIAL NANOMATERIAL	no information (EFSA)	I IIU/ NPs, no information (EFSA) no information (FFSA)	4				+	Positive	UDA UDA	USA USA	no information (EFSA)	2017		to information (EFSA)	+	1 1		+
in vitro	Micronucleus test in vitro	Demir et al., 2015 EFSA		i	Pigmentary	no information (EFSA)	no information (EFSA)	1			1	1	negative	EFSA	EFSA	no information (EFSA)	to information	rsa)	no information (EFSA)	1 1	1 1		1
in vitro	Micronucleus test in vitro	Rahman et al. 2002 EFSA			PIGMENTARY GRAD	E oso information (EFSA)	no information (EFSA)						regative	EFSA	trsa	no information (EFSA)	>200		to information (EFSA)				
in vitro	Cornet in vitro	Demir et al., 2013 EFSA		+	NANOMATERIAL	no information (EFSA)	no information (EFSA)		T				Positive	EFSA	UISA	no information (EFSA)	2.3		no information (EFSA)		+		+
in vitro	Comet in vitro	Chakrabarti et al., 2010 EFSA	-	1	NANOMATERIAL	no information (LFSA)	no information (EFSA)	1			1	1	Positive	ETSA	EFSA	no information (EFSA)	20.3 ± 2.1 58.25 + 8.11		no information (EFSA)	1 1	1 1		1
in vitro	Cornet in vitro	Franchi et al., 2015 EFSA			NANOMATERIAL	no information (EFSA)	no information (EFSA)					1	negative	EFSA	EFSA	no information (EFSA)	28-49		no information (EFSA)				
in vitro	Cornet in vitro	Sramkova et al., 2019 EFSA		-	NANOMATERIAL	no information (EFSA)	no information (EFSA)						negative	EFSA	CFSA	no information (EFSA)	5-10		no information (EFSA)	+	+		
in vitro	Other genotoxicity endool	Ahudrand Lai, 2017 EFSA		1	NANOMATERIAL	no information (EFSA)	no information (EFSA)	1			1	1	Positive	LIFSA	C/SA	no information (EFSA)	21		no information (EFSA)	1 1	1 1		1
in vivo	Micronucleus test in vivo	Chakrabarti et al., 2019 EFSA			NANOMATERIAL	no information (EFSA)	no information (EFSA)					oral	Positive	EFSA	EFSA	no information (EFSA)	58.25 ± 8.11		no information (EFSA)				
	Connet in vivo	Martins et al., 2017 EFSA		1	NANOMATERIAL	no information (EFSA)	no information (EFSA)	1				onal	negative	EFSA	trsa	no information (EFSA)	42		no information (EFSA)	1	1 1		1
in vivo																							

99.5		
-99		
	-	