8. Supplementary Tables and Figures

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1767 **Supplementary Table 1.** Lipidic nanocarriers of ABZ

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
Lipid-Based Nanocapsules	-	-	Female CF-1 mice model	Treat cystic echinococcosis	(Pensel, Gamboa et al. 2015)
Lipid-Based Nanocapsules	-	-	Female CF-1 mice model	Prevents Neurocysticercosis	(Pensel, Gamboa et al. 2015)
Liposomes	-	-	BALB/c mice model	Demonstrates anthelmintic effect	(Horiuchi, Satou et al. 2005)
Liposomes	Rapid Evaporation method	Particle size, encapsulation efficiency, TEM, UV Spectroscopy	*In vitro* drug release was studied using dialysis	Shows Parasitic Infections	(Panwar, Pandey et al. 2010)
Liposomes	-	-	Patients were taken to perform a retrospective study	Alveolar Echinococcosis	(Li, Song et al. 2015) (Zhang, Zhao et al.

					2020)
Phospholipids Aggregates	Vesicle to micelle transition of phospholipids	HPLC, Laser Light Scattering	*In vitro* drug release	-	(Vinarov, Gancheva et al. 2018)
Solid Lipids Nanoparticles	Solvent diffusion evaporation technique	Drug Entrapment efficiency-HPLC, Zeta Sizer, TEM	*In vivo* studies were conducted on BALB/c mice	Hydatid Cysts	(Ahmadnia, Moazeni et al. 2013)
Magnetic Solid Lipid Nanoparticles	Sonochemistry procedure	EXD, XRD, FESEM, TEM, VSM, FTIR, DLS	*In vitro* drug release in phosphate buffer saline	-	(Abidi, Ghaedi et al. 2018)
Solid Lipids Nanoparticles	high shear homogenization and micro emulsification	HPLC	Infected sheep liver	Hydatid Cysts	(Rafiei, Soltani et al. 2019)
Solid Lipids Nanoparticles	hot emulsification-ultrasonication technique and double emulsification method	PDI, Zeta potential, HPLC, EE, TEM, DSC, FTIR	*In vitro* drug release in phosphate buffer. *In vitro* drug distribution studies were conducted on neonatal porcine skin. *In vivo* studies were performed using female	Lymphatic Filariasis	(Permana, Tekko et al. 2019)

Liposomes	Supercritical fluid process	TEM	Sprague–Dawley rats. *In-Vitro* studies by dialysis method	Anti-parasitic	(Maqbool, Moyle et al. 2018)

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1770 **Supplementary Table 2.** Polymeric nanocarriers of ABZ

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
Magnetic alginate–chitosan beads for ABZ delivery	Ionic polymerization method	SEM, FTIR	*In vitro* drug release	-	(Wang, Li et al. 2010)
Albendazole-associated chitosan NPs	Emulsion crosslinking volatile technique	XRD, RP-HPLC	Pharmacokinetic parameters were evaluated in animal studies.	Hydatid cysts	(Liu, Wang et al. 2013)
ABZ-CS-NPs	-	-	male Swiss albino mice	Trichinellosis	(NASSEF, MOHARM et al. 2019)
ABZ-SO-loaded CS-PGLA NPs	Nanoprecipitation technique	HPLC, Particle size distribution, Zeta potential, SEM	CE infected mice model	Cystic echinococcosis	(Darvishi, Moazeni et al. 2020)
ABZ-SO loaded PLGA-PEG polymeric nanoparticl	Double-emulsion method	FTIR	Hydatid cysts of E. granulosus were collected from the livers of infected sheep.	Cystic echinococcosis	(Naseri, Akbarzadeh et al. 2016)

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1773 **Supplementary Table 3.** Hybrid nanocarriers of ABZ

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
Chitosan coated NLCs	micro emulsification technique	XRPD, FTIR, EE, PDI, HPLC	Male Swiss albino mice	Trichinellosis	(Eid, Ashour et al. 2020)
Chitosan-Cyclodextrin NPs	Ionic gelation approach	Thermal analysis, UV spectroscopy	*In-vitro* rheological studies	Anthelmintic	(Alamdarnejad, Sharif et al. 2013)

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1775 **Supplementary Table 4.** Solid Dispersions formulations of ABZ

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
ABZ-Solid dispersions	Solvent evaporation method.	XRD	*In vitro* dissolution studies	-	(Torrado, Torrado et al. 1996)
ABZ-Solid dispersion	Fusion method	XRD, FTIR, DSC, SEM, Phase Solubility studies, Saturation solubility studies.	*In-vitro* drug release studies	Anthelmintic	(Simonazzi, Cid et al. 2018)
ABZ-Solid dispersions	Fusion method	SEM, PXRD, FTIR	*In-vitro* dissolution test and molecular docking. *in vivo* pharmacokinetic studies were performed on beagle dogs.	Antiparasitic	(Dong, Zheng et al. 2020)
ABZ-Solid dispersions	-	XRD, SEM, FTIR	-	Anthelmintic	(Yang, Mohylyuk et al. 2020)
ABZ-Solid dispersions	-	UV spectroscopy, equilibrium solubility studies	*In-vitro* drug release studies	Antiparasitic	(Halder, Azad et al. 2021)

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1777 **Supplementary Table 5.** Dendrimers, nanocrystals, nanofibres, nanosuspensions and nanocomposites of ABZ

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
ABZ loaded dendrimers	Divergent synthetic approaches	UV, FTIR, 1H-NMR spectroscopy, and EE.	*In vivo* studies were performed on Male albino rats (SD strain).	Anthelmintic effect	(Mansuri, Kesharwani et al. 2016)
ABZ loaded self-dispersible nanocrystals	High-pressure homogenization	photon correlation spectrometry, Polydispersity Index	*In vivo* experimental model intestinal nematode parasite in dogs	Anthelmintic effect	(Simonazzi, Cid et al. 2018)
ABZ loaded nanocrystals	spray-drying and high-shear homogenization technique	Photon Correlation Spectrometry	*In vivo* studies were conducted using mice model	Against hydatid cyst, ancylostomiasis	(Paredes, Bruni et al. 2018)
ABZ loaded nanofibers	Electrospinning method	Scanning Electron Microscopy	*In-vitro* dissolution studies and ex-vivo on the buccal mucosa of goat	-	(Kamble, Mehtre et al. 2019)
ABZ loaded nanosuspensions	High Shearing Homogenization, lyophilization, and Spray drying	PCS, Differential Scanning Calorimetry, PXRD, High-Performance Liquid	Experiments conducted for Dissolution and Stability	-	(Ravichandran 2010)

		Chromatography, Scanning Electron Microscopy			
ABZ dry nanosuspensions	Surfactant facilitate media milling technique and Solidification process	AFM and SEM	Dissolution analysis conducted utilizing AFM		(Fülöp, Jakab et al. 2018)
ABZ nanosuspensions	antisolvent sono-precipitation technology and Lyophilization	DLS, SEM, X-ray Diffraction, and FTIR	*In-vitro* studies were performed using Pinworms	Against enterobiasis	(Mekkawy, Fetih et al. 2020)
Sepharose ABZ nanoparticles	Mixing and centrifugation process	-	Pull down Assay was conducted to investigate the interaction between drug and beta-tubulin	Against liver fluke	(Chambers, Ryan et al. 2010)
BSA-ABZ Nanoparticles	-	-	Fluorescence binding assays	Against Fasciola hepatica	(Chambers, Ryan et al. 2010)
CDS-ABZ- NPs	Chemically synthesized	SEM, XRD, DSC, FTIR	*In-vitro* studies were performed using PhreretimaPosthuma	Antiparasitic effects	(Shakir, Faraz et al. 2015)

			earthworm		
ABZ-CuO nanocomposites	Sol-gel methodology	UV-Spectroscopy, AFM, SEM & FTIR	The efficacy of nanocomposites was investigated by relative motility assay	Against Lymphatic Filariasis	(Zafar, Ahmad et al. 2016)
LaFeO3-ABZ nanoparticles	-	SEM, TEM, FTIR, & XRD	-	-	(de Macedo, Garcia et al. 2016)
Se-ABZ-NPs	-		Scolicidal assay to explore the scolicidal rational	Against hydatidosis	(AFIFI and OSHIBA 2018)

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1779 **Supplementary Table 6.** Complexes and miscellaneous formulations of ABZ

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
Cyclodextrin-ABZ Inclusion Complexes	Spray drying	DSC, XRD, ESI-MS, ROESY, NMR, and Dissolution Studies	In- vivo analysis and assays were conducted on the mice model.	Against Trichinellosis	(García, Leonardi et al. 2014)
Modified Cyclodextrin-ABZ Complexes	Spray drying	XRD, ROSEY, NMR, DSC, ESI-M, and Dissolution analysis	*In-vitro* analysis	Antiparasitic effect	(García, Leonardi et al. 2014)
ABZ-Cyclodextrin complexes	Spray- drying	NMR	-	-	(Ferreira, García et al. 2015)
ABZ-Cyclodextrin complexes	Drying under reduced pressure	Ultra Violet Spectroscopy and ITC	*In- Vivo* studies were performed on mice model to evaluate the increased bioavailability	Anthelmintic effect	(Stepniak, Buczkowski et al. 2017)
ABZ- itaconyl-β-cyclodextrin complexes	Spray drying	phase solubility diagrams, dissolution efficiency, XRD, DSC, FTIR, Scanning electronic microscopy, MS, and NMR	*In-vitro* drug release studies	Antiparasitic effect	(García, Priotti et al. 2019)
ABZ-Cyclodextrin	Freeze- drying	FTIR, DSC, XRD, NMR &	*In-vitro* drug release analysis	-	(Saleh,

Complexes	technique	Microanalysis, Thermal analysis			Khaleel et al. 2013)
ABZ Sulfoxide-loaded Eudragit particles	Solvent evaporation and Emulsification technique	Entrapment efficiency and X-ray diffraction	*In vitro* drug release	-	(de Souza and Marchetti 2012)
ABZ salt formation nanoformulations	Bottom-up method	Scanning microscope technology, ATR-FTIR	*In vitro* analysis in contrast to H. polygyrus. And *In vivo* studies were also conducted.	Anthelmintic effect	(Buchter, Priotti et al. 2020)

Supplementary Table 7. Drug repurposing of ABZ

Drug	Experimental model	Assays	Biological effects	References
Albendazole	*In-vitro* studies were perfomed on Head and Neck Squamous Cell tumors	western blotting, Live and dead assay, scratch assay, Immunofluorescence, Flow cytometry	Anti-tumor effect	(Ghasemi, Black et al. 2017)
Albendazole	*In-vitro* studies	-	Antiangiogenesis effect on cornea	(Cho, Shin et al. 2019)
Albendazole	*In-vitro* studies on various Squamous cell lines	-	Squamous Cell Tumor	(Zhang, Lian et al. 2019)
Albendazole	A549 mouse model	western blotting and MTT assays	small cell lung tumors	(Zhou, Du et al. 2017)
Albendazole	human leukemia U937 cells	-	Leukemia	(Wang LiangJun, Lee YuanChin et al. 2019)

Albendazole	*in-vitro* and *in-vivo* studies were performed on SW1990 and PANC-1cell lines and xenograft mice model.	MTT assay, colony formation, Transwell assays.	Pancreatic cancers	(Chen, Weng et al. 2020)
Albendazole	*in-vitro* studies were performed on various cell lines such as SNU-1, SNU-16 cells, and GES-1 cells	MTT assay, Western blotting, immunocytometry, and RT-PCR	Gastro malignanncies	(Yang, Ha et al. 2021)
Albendazole	*In-vitro* studies on K562 cells	-	Leukemia	(Wang, Liou et al. 2020)
Albendazole	*in-vitro* studies were conducted using different types of prostate cell lines such as PC3, AT2,DU145	-	Prostate cancer	(Kim, Shin et al. 2021)

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Supplementary Table 8. Drug repurposing of albendazole nanocarriers (Lipidic, polymeric, albumin based, complexes and miscellaneous carriers)

ABZ delivery system	Methods of preparation	Physicochemical characterization	Experimental model/Cells/Assay	Biological effects	References
ABZ Lipid carriers	-	-	MTT Assay /cytotoxicity on various cell lines (B16F0,HEK293T, MCF 7).	Antineoplastic	(Movahedi, Wu et al. 2020)
ABZ-Liposomes	Super critical fluid technology	-	Target GRPR to increase the drug ddelivery to malignant tumors	Malignant tumor	(Maqbool, Falconer et al. 2020)
ABZ-SLN	homogenization and blending phenomena and probe sonication technique	-	*in-vitro* release pattern of the drug	cytotoxicity against U-87 MG Glioma Cell	(Marslin, Siram et al. 2017)
ABZ loaded PLGANPs	-	FTIR	*in-vitro* properties of ABZ were examined byzeta potential and MTT assay and drug release studies	Anticancer effect	(Kang BongSeok, Choi JinSeok et al. 2017)
ABZ- PU NPs	-	SEM, UV Spectroscopy, FTIR	*in-vitro* studies were performed on cell lines, MCF-7 and MDA-MB-231	Cellular cytotoxicity	(Racoviceanu, Trandafirescu et al. 2020)

	-	FTIR, XRD, DSC	*In-vitro* studies were performed on 4T1 cell line and *in-vivo* studieson BALB mice	triple-negative breast cancer	(Priotti, Baglioni et al. 2018)
ABZ-Albumin NPs	-	DLS, PDI, HPLC	OVCAR3, SKOV3, and A2780, HOSE and Chinese hamster ovary cell lines were used for *in-vitro* analysis.	Ovarian cancer	(Noorani, Stenzel et al. 2015)
ABZ-Albumin NPs	Simple desolvation technique	-	*In-vitro* studies were performed on AsPC-1 cell lines	Multicellular Pancreatic tumor	(Lu, Noorani et al. 2017)
ABZ-Albumin NPs	-	-	*In-vitro* studies were performed on OVCAR3+,SKOV3, and Human ovarian surface epithelial cell line	Ovarian Cancer	(Sugawara, Kadomura et al. 2005)
Various control release formulation	-	-	*In-vitro* studies were performed on on Caco-2 cell lines.	Malignant tumor	(Noorani, Pourgholami et al. 2014)
TCS-ABZ BSA-AG NPs	self-assembly nano system	-	*in-vitro* cytotoxicity studies and cell apoptosis assays were performed on A549/T cell lines	anticancer	(Tang, Liang et al. 2017)
ABZ-Nanocrystals	solvent precipitation technique amid spray	-	*In-vitro* drug release studies	Anti-tumor	(Koradia, Parikh et al. 2018)

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