

Characteristics of commercial oral rabies vaccines for potential use in dogs

Information provided in this table is based on published literature or manufacturers websites only

+ applicable or information available
 - no or not applicable
 NI not done or no information
 * submitted but not yet approved

MLV modified live vaccine
 BVD biotechnology derived vaccine
 A attenuated oral rabies vaccine
 R recombinant oral rabies virus vaccine

NGS next generation sequencing
 NHP non human primates

General information							Characteristics					Efficacy				Safety										Advers events**		Key sources		
Country	Company	Vaccine strain	License				Vaccine					studies performed*		Fulfilling WOA standards		target species	non-target species	residual pathog. rodents	horizontal transmission	reversion to virulence	immuno-compromized animal model	genetic stability (serial passaging in mice)	genetic stability (NGS)	human risk assessment (not including NHP studies)	Fulfilling WOA standards	Animals	Humans			
			Centralized (EMA or EAC)	National/ decentralized	Wildlife	Dogs	GMO	Classification	Vector	Type	Generation*	Wildlife	Dogs	Wildlife	Dogs															
France	Ceva Santé Animale	SPBN GASGAS	+	+	+	*	+	BVD	RABV	A	3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NI	NI	https://www.ema.europa.eu/en/medicines/veterinary/EPAR/rabitic https://www.ema.europa.eu/en/documents/assessment-report/rabitic-epar-public-assessment-report_en.pdf https://doi.org/10.3390/v11090790 https://doi.org/10.3390/v11090790		
France	Virbac	SAG2	+	+	+	-	-	MLV	RABV	A	2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	NI	NI	https://www.ema.europa.eu/en/medicines/veterinary/EPAR/rabipen-sag2 https://www.ema.europa.eu/en/documents/scientific-discussion/rabipen-sag2-epar-scientific-discussion_en.pdf https://www.ncbi.nlm.nih.gov/pubmed/3014791 https://www.ncbi.nlm.nih.gov/pubmed/3014791 https://doi.org/10.7554/0000-3558-38-2-428 https://doi.org/10.1186/1475-2875-2001-05440-x https://doi.org/10.1186/1475-2875-2001-05440-x		
France	Ceva Santé Animale	SAD B19	-	+	+	-	-	MLV	RABV	A	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/vet-1.html	
Czech Republic	Bioveta	SAD Bern	-	+	+	-	-	MLV	RABV	A	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/vet-1.html
USA	Boehringer Ingelheim Group	VRG	-	+	+	-	+	BVD	VACV	R	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.fda.gov/oc/ohrt/ohrt-2008-08-089 https://doi.org/10.1186/1475-2875-2001-05440-x	
Canada	Artemis Technologies	AdRG1.3	-	+	+	-	+	BVD	HAdV5	R	-	+	NI	+	NI	+	+	+	+	+	+	+	+	+	+	+	+	+	https://doi.org/10.1016/j.vaccine.2013.06.069 https://doi.org/10.1016/j.vaccine.2008.02.074 https://doi.org/10.1016/j.vaccine.2008.08.005	
Czech Republic	Bioveta	SAD Clone'	-	+	+	-	-	MLV	RABV	A	1	+	NI	+	NI	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Kazakhstan	?	VRC-R22	-	+	+	+	-	MLV	RABV	A	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Belarus	?	KMIEV-94	-	+	+	-	-	MLV	RABV	A	1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Ukraine	GmbH "Ukrvetprompostach"	VRG	-	+	+	+	+	BVD	VACV	R	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Russia	FKP Schelkovskiy Biocombinate	RV-97	-	+	+	-	-	MLV	RABV	A	1	+	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Russia	FKP "Biofabrik Stavropol"	RV-97	-	+	+	-	-	MLV	RABV	A	1	+	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Russia	Pokrov biological plant	ERA G333	-	+	+	-	+	BVD	RABV	A	3	+	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Russia	ARRIAH FGU	RV-97	-	+	+	-	-	MLV	RABV	A	1	+	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Ukraine	GmbH "Ukrvetprompostach"	SAD Bern SAD B19 like	-	+	+	+	-	MLV	RABV	A	1	+	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	
Belarus	Vitebskaja Biofabrica	ERA G333	-	+	+	-	+	BVD	RABV	A	3	+	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	https://www.usdvl.ca/authorisation-a-approval/marketing-authorisation-of-vmps/list-of-vmps/currently-authorised-vmps-vma-detailed?id=0919772780926011 https://www.bioveta.eu/en/products/veterinary-products/rabdrop-oral-suspension.html	

* see main document for explanation

Difficult to compare. Only indicates whether studies have been done; but says nothing about the number of animals used -

** Difficult to compare as (i) for some vaccine constructs there is no data available, (ii) for others vaccines there are different levels of use and (iii) inadequate surveillance