

Table 1. Licensed prophylactic VLP vaccine against oncoviruses

Commercial Name	Virus	Cancer Type	Manufactures	Tumor antigens	Adjuvants	Expression system
Engerix-B	HBV Hepatitis B virus	Hepatocellular carcinoma	GSK	SHBs	Aluminum hydroxide	Yeast: <i>Saccharomyces cerevisiae</i>
Recombivax HB (H-B-Vax®II)	HBV Hepatitis B virus	Hepatocellular carcinoma	Merck	SHBs	Aluminum sulphate	Yeast: <i>Saccharomyces cerevisiae</i>
Sci-B-Vac® (Bio-Hep-B®)	HBV Hepatitis B virus	Hepatocellular carcinoma	SciGen	SHBs, MHBs, LHBs	Aluminum hydroxide	Mammalian (CHO cells)
Hepilisav-B	HBV Hepatitis B virus	Hepatocellular carcinoma	Dynavax	SHBs	1018 ISS	Yeast: <i>H. polymorpha</i>
Fendrix	HBV Hepatitis B virus	Hepatocellular carcinoma	GSK	SHBs	ASO4 (Aluminum hydroxide & MPL)	Yeast: <i>Saccharomyces cerevisiae</i>
Hepavax-Gene	HBV Hepatitis B virus	Hepatocellular carcinoma	Crucell	SHBs, MHBs	Aluminum hydroxide	Yeast: <i>H. polymorpha</i>
Cervarix (bivalent vaccine)	HPV Human papillomavirus	Cervical cancer, Anal cancer, Penis cancer, Head and neck carcinoma	Glaxo Smith Kline	L1 HPV 16 L1 HPV 18	ASO4:Al(OH) ₃ MPL	Hi-5 baculovirus
Gardasil (quadrivalent vaccine)	HPV Human papillomavirus	Cervical cancer, Anal cancer, Penis cancer, Head and neck carcinoma	Merck	L1 HPV6 L1 HPV11 L1 HPV16 L1 HPV18	Amorphous, aluminium, hydroxyphosphate sulphate	yeast: <i>Saccharomyces cerevisiae</i>
Gardasil9 (nonavalent vaccine)	HPV Human papillomavirus	Cervical cancer, Anal cancer, Penis cancer, Head and neck carcinoma	Merck	L1 HPV6 L1 HPV11 L1 HPV16 L1 HPV18 L1 HPV31 L1 HPV33 L1 HPV45 L1 HPV52 L1 HPV58	Amorphous, aluminium, hydroxyphosphate sulphate	yeast: <i>Saccharomyces cerevisiae</i>