



The study of the cross-interaction of antibodies with antigens of different types of human papillomaviruses (HPV)

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Antigenic proteins of papillomaviruses of high-risk oncogenic types HPV16 L1, HPV18 L1, HPV31 L1, HPV45 L1 as well HPV6 L1 of anogenital types were obtained in the plant expression system on the base of transgenic with these types of tomato fruits using genetic constructs:

RB-> p35S->RdRP(2a+2b)->t35S->p35S->HPV16 L1 (18, 31, 45, and 6).

To rise antibodies, mice were peroral vaccinated 3 times with 500 mg of vaccine material of transgenic tomato fruits with appropriate gene constructs with the interval of one month. It was shown that all antigenic proteins HPV L1 occurred to be able for cross-reaction with antibodies of each type, moreover the anogenital type HPV6 L1 cross-reacted with antibodies to types HPV16 L1 (18, 31 and 45) (Fig. 1, 2).

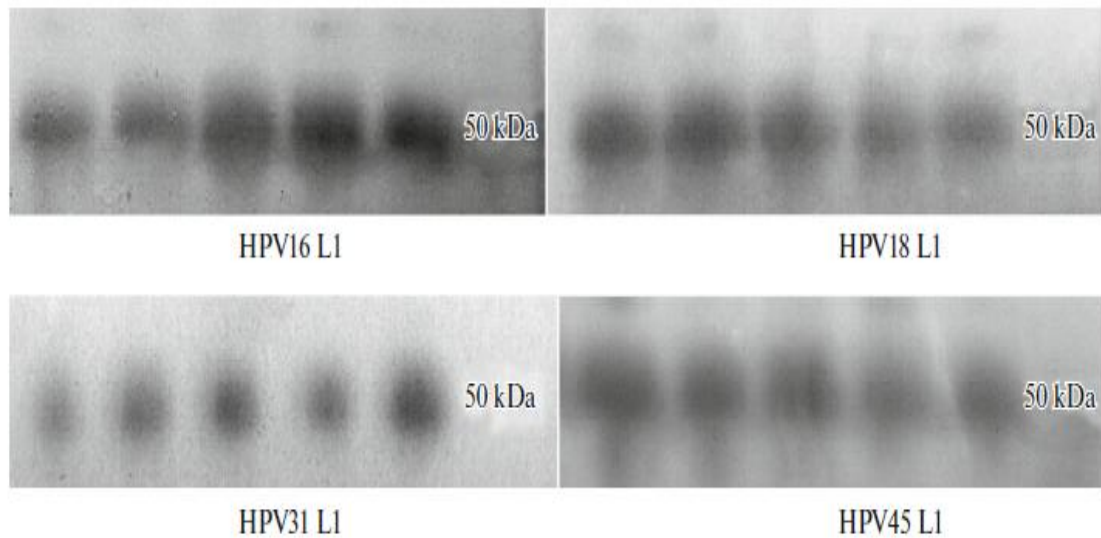


Fig. 1. Western blot hybridization of antigenic proteins HPV L1 of HPV types 16, 18, 31, and 45 isolated from transformed fruit after transformation with *Agrobacterium* carrying the corresponding genetic constructs. The primary antibodies were obtained from blood serum of mice vaccinated with HPV16 L1.

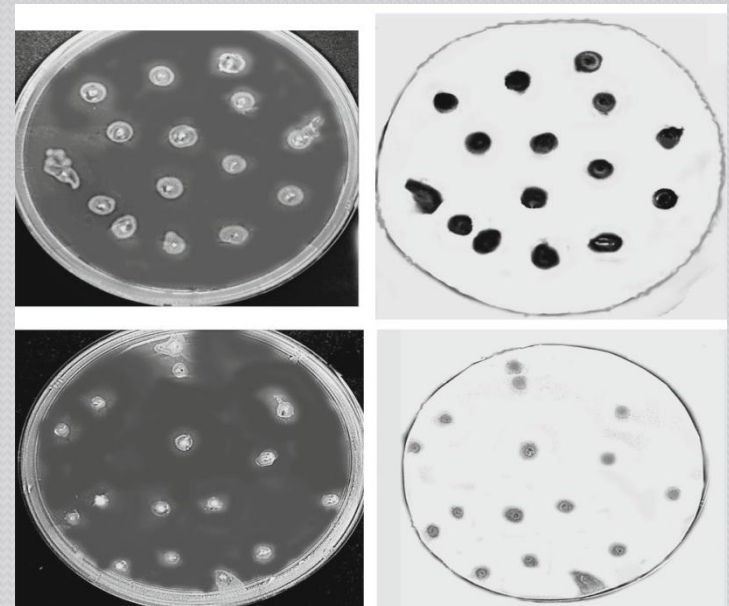


Fig. 2. *E. coli* BL21 colonies with pUC57 HPV6 L1 (to the left) and after Western blot hybridization with the antibodies (to the right). The upper pair—serum antibodies of mice that were orally vaccinated with the transgenic tomato fruit with HPV16 L1; the lower pair—the standard antibodies to HPV16 L1.

The results of the investigation of protein sequencing of 4 proteins L1 was shown that more likely antigenic determinant of T lymphocytes would be ones in the position 12-21 of the sequence. For HPV16 L1 – YLPPVPVSKV, for HPV31 L1 – YLPPVPVSKV, for HPV18 L1 YLPPPSVARV, for HPV45 L1 –YLPPPSVARV (Fig. 3).

HPV16											HPV18												
Pos	1	2	3	4	5	6	7	8	9	Score	Pos	1	2	3	4	5	6	7	8	9	Score		
12	Y	L	P	P	V	P	V	S	K	V	22	181	S	Q	G	D	C	P	P	L	E	L	24
304	A	Q	I	F	N	K	P	Y	W	L	22	12	Y	L	P	P	P	S	V	A	R	V	22
372	L	Q	F	I	F	Q	L	C	K	I	22	304	S	Q	L	F	N	K	P	Y	W	L	21
HPV 31											HPV 45												
Pos	1	2	3	4	5	6	7	8	9	Score	Pos	1	2	3	4	5	6	7	8	9	Score		
12	Y	L	P	P	V	P	V	S	K	V	22	12	Y	L	P	P	P	S	V	A	R	V	22
69	L	Q	Y	R	V	F	R	V	R	L	22	307	S	Q	L	F	N	K	P	Y	W	L	21
373	L	Q	F	I	F	Q	L	C	K	I	22	464	D	Q	Y	P	L	G	R	K	F	L	21

Fig.3. Probable antigenic determinants for T cells in the protein sequences HPV16 L1, HPV 18 L1, HPV31 L1, HPV45 L1 according to the program



Thank you for your attention!