

20.2 Isolated Peptide Complexes

One of the first polypeptide preparations isolated from the calf thymus was Thymalin.^{27,28} This polypeptide was able to restore disturbed immunological responsiveness, improve cell metabolism and stimulate cell immunity, regeneration and haemopoiesis (in case of their suppression). It displayed geroprotective properties and increased mean life span in experimental animals.^{14,29,30} The important feature of polypeptide preparations is their anti-carcinogenic activity. This property of Thymalin was reported in experiments on induced and spontaneous carcinogenesis. Rats with 7,12-dimethyl-benzanthracene (DMBA)-induced carcinogenesis treated with Thymalin revealed decreased tumour incidence by 24% and reduced the number of mammary adenocarcinomas 3.8-fold as compared to the control animals.²¹ Administration of Thymalin to irradiated mice and rats for ten days, twice daily, decreased the number of malignant neoplasia. At the same time, the mice exposed to fraction irradiation and treated with Thymalin showed a 3.5-fold decrease in the number of tumors as compared to the irradiated control (Table 20.1).

Prolonged administration of Thymalin to SHR mice starting from 4 months of age resulted in a significant decrease of spontaneous tumor incidence—40% as compared to 55% in the controls. C3H/Sn mice treated with

Table 20.1 Effect of peptides on experimentally induced tumors in rodents.^{a,b,c}

Peptides	Animal species/strain	Carcinogenic action	Tumor site/localization	Tumor incidence%	
				Control	Peptide
Epithalamin complex of pineal peptides	Rats	DMBA X-ray irradiation	Mammary gland	81	26 ^d
			Mammary gland	16	3 ^d
Thymalin complex of thymus peptides	Rats	DMBA X-ray irradiation	Mammary gland	69	18 ^d
			Mammary gland	21	3 ^d
	C3H mice	X-ray irradiation	Mammary gland	38	14 ^d
Thymogen/Glu-Trp (EW)	Rats	Isotopes ⁹⁰ Sr and ¹³⁷ Cs	Leukemia	46	14 ^d
			Any malignant tumors	16	8 ^d
Vilon/Lys-Glu (KE)	CBA mice	DMH	Kidney	60	14 ^d
Epitalon/Ala-Glu-Asp-Gly (AEDG)	C3H/He mice	MMTV	Mammary gland	9	5 ^d
	Female rats	Constant lighting	Mammary gland	41	27 ^d
	Male rats	Constant lighting	Leukemia	12	0

^aDMBA: 7,12-dimethylbenz(*a*)anthracene;

^bDMH: 1,2-dimethylhydrazine;

^cMMTV: mouse mammary tumor virus;

^dThe differences are statistically significant compared to the control by $p < 0.05$.