crease in the activity of plasma glycogen phosphorylases *a* and *b* in comparison to the initial level [3]. We assumed that the boosted enzymatic activity might be a consequence of the prolonged increase of myocardial contractile activity under the influence of dopamine in a dose stimulating the β-adrenoreceptors in the sinoatrial node and myocardium.

According to Evtanave *et al.* [8], the pharmacodynamics of dopamine administered in a dose of 5 μg per kg per min is also governed by the predominance of β-adrenergic effects. However, a change in the functional state of an organ under pathological conditions (including myocardial ischemia) is known to alter the parameters of adrenergic regulation (the number and affinity of adrenoreceptors, the degree of receptor coupling to intracellular structures) [5,6]. Therefore, the noted effect of dopamine preventing a rise of the plasma glycogen phosphorylase activity can be attributed to a weak expression (or even absence) of the β-adrenomimetic effect of the given dose of preparation on the ischemic myocardium and to the predominance of stimulation of the presynaptic D-2 dopamine and postsynaptic D-1 dopamine receptors of the coronary arteries. The result of such a predominance is inhibition of norepinephrine release, dilation of the coronary arteries, and prevalence of oxygen delivery over its consumption in the myocardium [9-11].

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The Effect of Myelopide and Tactivine on Bone Marrow

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UDC 615.361.438.015.4:612.119]07

Translated from *Bulleten' Eksperimental'noi Biologii i Meditsiny*, Vol. 115, № 3, pp. 273–274 , March, 1993
Original article submitted October 28, 1992

Key Words: *myelopide; tactivine; bone marrow*

Immunoactive peptides in the thymus and bone marrow play an important role in hemopoiesis. It is known that these peptides can alter the proliferation, differentiation, and migration of hemopoietic cells [1,4,5]. The peptides can also correct disturbances of hemopoiesis following irradiation and thymectomy [7,9]. However, the action of these peptides on hemopoietic tissue has not yet been definitively investigated.

This is a comparative study of the influence of tactivine and myelopide (two preparations of this group widely used in clinical practice) on the clon-

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0007–4888/93/0003–0292$12.50

ing efficiency of hemopoietic and stromal cells during bone marrow cultivation in diffusion chambers.

MATERIALS AND METHODS

Experiments were carried out on male Wistar rats weighing 140-160 g. Tactivine (manufactured by the I. I. Mechnikov Research Institute of Vaccines and Sera) and myelopide (manufactured by the Institute of Bioorganic Chemistry, Russian Academy of Sciences) were injected hypodermically in a dose of 100 μg/kg and 1000 μg/kg, respectively, three times a week. The control animals were given the same dose of physiological saline. Three days following the last injection the rats were killed by decapitation, and the bone marrow was removed from the femur under sterile conditions. The cultivation of bone marrow was carried out in a cylindrical diffusion chamber (made of Millipore filter) in autologous plasmoid [2,6]. The chamber was implanted intraperitoneally into the mice which had been initially given cyclophosphane in a dose of 200 mg/kg. On the 7th and 12th day after the mice were killed the chambers were removed, and cytological preparations were made from their contents. After they were stained (Romanov method) the total concentration of the clusters (aggregates containing 5-50 cells) and colonies (aggregates containing more than 50 cells) - granulocyte-macrophage, granulocyte, macrophage, and fibroblastic - in the cytological preparations was determined. The cloning efficiency was calculated for 10^5 cells.

The results of the experiment were analyzed by variational statistics methods.

RESULTS

Bone marrow cultivation in the diffusion chamber led to the appearance of cluster-forming and colony-forming units, which are the progenitors of myelopoiesis. They occupy an intermediate position between polypotent and unipotent progenitor cells [11]. There also appeared colonies and clusters of fibroblastic cells [2], which are similar in their properties to those found in other culture systems [3, 10]. This makes it possible to assess simultaneously the action of different factors on the hemopoietic and stromal cells.

The cultivation of the bone marrow of rats which were given tactivine and myelopide showed that the level of the earliest progenitor cells of granulocytomonocytopoiesis was practically unaffected by the peptides in question (Fig. 1). Both preparations increased the cloning efficiency of granulocyte progenitor cells. Tactivine was found to have a stronger effect than myelopide. Both peptides to a certain extent stimulated monocytopoiesis. It can thus be

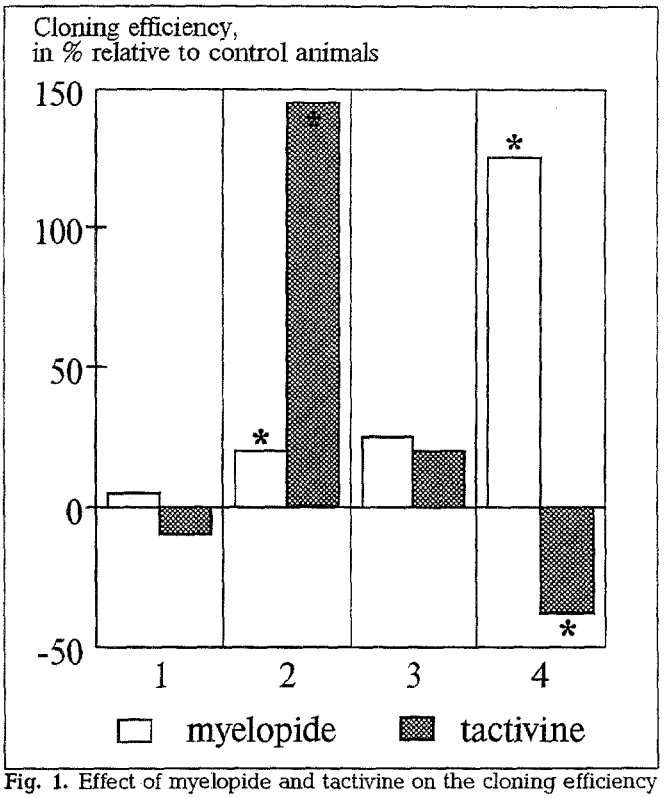

Fig. 1. Effect of myelopide and tactivine on the cloning efficiency of bone marrow cells in a diffusion chamber. Abscissa: *1*) granulocyte–macrophage clusters and colonies; *2*) granulocyte clusters and colonies; *3*) macrophage clusters and colonies; *4*) fibroblastic clusters and colonies. Asterisk: $p<0.05$ (as compared with the control).

assumed that the progenitor unicellls are the point of application of the peptides.

As shown above, in bone marrow cultivation in a diffusion chamber clusters and colonies of cells similar to fibroblastic cells are formed. They are the progenitors of stromal mechanocytes which create a hemopoiesis-inducing microenviroment and have an osteogenic potency [2,8]. Tactivine had a slight inhibitory effect on the cell population in question, while myelopide had a stimulating effect in this respect.

Thus, the creation of an excess concentration of thymic and bone marrow peptides in the organism changes certain clonogenic properties of the bone marrow. Tactivine and myelopide have a similar effect on myelopoiesis, but a different effects on the state of the progenitors of stromal mechanocytes. The probable explanation may be found during the investigation of cellular mechanisms of the effects of separate fractions of the preparations studied.

The data obtained may be used in pathological substantiation for immunocorrection of some disturbances of hemopoiesis and osteogenesis.

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MICROBIOLOGY AND IMMUNOLOGY

Lymphocytes with Receptors of Group A Streptoccal Polysaccharide in the Thymus of Rheumatic Patients: Altered Reaction to Adenosine, Theophylline, and Normal Thymocyte Culture-Conditioned Medium

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UDC 616−002.77−07:616.438−008.853.2

Translated from *Byulleten' Eksperimental'noi Biologii i Meditsiny*, Vol. 115, № 3, pp. 274−276, March, 1993
Original article submitted November 26, 1992

Key Words: *thymocytes; immunomodulators; group A streptococcus; cross-reactive antigens*

One of the characteristic features of the rheumatic process is the presence in patients' sera of high levels of antibodies to the polysaccharide of group A streptococci (A-PS) [2,10,11]. An important step in the understanding of the pathogenetic role of A-PS antibodies was the discovery of the determinants shared by A-PS and one of the epidermal antigens of the thymus epithelial cells. It was suggested that antibodies to the A-PS cross-reactive determinant cause damage to the thymus epithelium, thereby leading to disturbed thymocyte differentiation and to the development of the autoimmune process in rheumatism [7-9]. The involvement of the thymus in the rheumatic pathological process is evidenced by: a) focal destruction of the epithelial cells containing epidermal antigens, including determinants shared by A-PS; b) presence of bound immunoglobulins and complement in the cytoplasm of these cells [4,13]; c) an increase in both the number and functional

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0007−4888/93/0003−0294$12.50