Introduction. Viruses are the most abundant and least studied group of all hydrobionts. Currently there are evidences about evolution of viruses, changes in virulence and transfer of viruses between ecosystems [1-3]. In this connection we have a necessity to estimate comprehensively the ways of alien (allochthonous) viruses for aquatic ecosystem from land to hydrosphere, and also to study pollution of land and terrabionts (organisms from a land) by viruses of hydrosphere (autochthonous), since this party in circulation of viruses practically is not investigated, though currently is urgent and live issue [4].

The results, received by us earlier, showed the contamination by viruses from a land of water, marine sediments, mollusks and fishes of Black Sea environment from 2,1 to 74 % [5, 6]. This fact gave us suggestion about an opportunity of their adaptation to the new hosts — hydrobionts. Our experiment carried out in laboratory conditions has confirmed adaptation of viruses from a land to marine environment and hydrobionts [7]. Thus, for the first time we proved, that the contamination by viruses of a land of hydrosphere has potential danger not only for the people (in cases of their infecting through marine food, bathing etc.), but also for hydrobionts. This virus exchange in a nature results in occurrence of «new viruses» and they may be potentially dangerous for organisms of a land and hydrobionts.

People have a real opportunity to contact with marine viruses which can have the implantation into their mucous and this situation can be during recreation, fishing and another economic activity. Whether the marine viruses will be destroyed as a result of human immunity or they will find other way of a survival such as adaptation, latent or acute infection? Currently we haven’t the answers for these questions.

The purpose of our study was the search of marine viruses in the human mucous with determination of their possible role in human pathology. So for the first time we carried out the search of algae viruses in a clinical material (cervico-vaginal secretion) from the women which had a recreation on the Black Sea beach 2-5 months ago before their gynecological diseases had beginning.

Materials and Methods. We studied 41 united samples prepared from 182 clinical materials

Results of algae viruses search in human clinical material

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Summary. For the first time from a clinical material were isolated algae viruses. This fact testifies about probable role of algae viruses in a human pathology and establishes a new unknown ways in ecology of marine viruses and demands the further extended researches.

Keywords: viral ecology, algae viruses, clinical material.

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(cervico-vaginal secretion) from women (from Donetsk, Ukraine) with 3 different gynecological diagnoses — colpitis (36 samples), uterus fibroids (63 samples) and erosion of uterus cervix (83 samples). Each of 41 samples consisted of clinical materials of 2-5 women with the same diagnosis. All 182 women were on Black Sea beaches 2-5 months before beginning their diseases. For isolating algae viruses of *Tetraselmis viridis* (TvV), *Phaeodactylum tricornutum* (PtV) and *Dunaliella viridis* (DvV) from clinical material we used the patented method (patent 65864A UA, N2003065499).

**Results and Discussion.** We carried out the search of algae viruses of *Tetraselmis viridis* (TvV), *Phaeodactylum tricornutum* (PtV) and *Dunaliella viridis* (DvV) in a clinical material because earlier these viruses were isolated from Black Sea environment [8, 9]. Some properties of these viruses were studied and described that gave the basis to including them in family of Phycodnaeviridae. According the literature data it’s known about more closely related to each other among members of Phycodnaeviridae. Moreover, they are more closely related to the herpesviruses than to other dsDNA viruses including poxviruses, baculoviruses and African swine fiver virus [10]. The main cause of algae viruses search in clinical material was connected with this information — close relation of algae viruses with some dsDNA viruses — pathogenic for people herpesviruses.

On the fig. 1 are established the electron-microscopy pictures of isolated and studied Black Sea algae viruses.

The results of search of algae viruses in clinical material from women are shown in Table. During this study after 7-10 days of contact the material with algae we did the «blind» inoculations (sowings) in cases of absent oppression

<table>
<thead>
<tr>
<th>Diagnosis (primary number of samples)</th>
<th>Number of united samples</th>
<th>N of inoculation</th>
<th>Results of infecting fluid algae cultures (growth or oppression with lysis of algae cultures) and isolation of algae viruses</th>
</tr>
</thead>
<tbody>
<tr>
<td>colpitis (36)</td>
<td>11c</td>
<td>1</td>
<td>Growth</td>
</tr>
<tr>
<td>uterus fibroids (63)</td>
<td>14f</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>erosion of uterus cervix (83)</td>
<td>16e</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>isolation of algae viruses from 41 united samples</td>
<td>5-10</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5-10</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>No virus</td>
</tr>
</tbody>
</table>

16 PtV were isolated: 6 among 11c; 5 among 14f and 5 among 16e

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**Fig. 1.** The electron-microscopy pictures of virions TvV (A) — TvV-S20, PtV(B) — PtV-S118 and DvV(C) — DvV-S12. Virions have an icosahedral forms with size 56-58, 45-48 and 50-53 nm for TvV, PtV and DvV [8, 9].
(lysis) of algae cultures in first, second, third and next inoculation (from 1 to 10 inoculation). However we observed the oppression of algae culture growth with subsequent lysis only at use for infection (inoculation) by a researched material of algae culture *Phaeodactilum tricornutum*.

The first inoculation of culture *Phaeodactilum tricornutum* by a researched material resulted in display of an oppression of growth of culture with further lysis in 7ч10 days. Further inoculations (sowings) with passages material have determined a stable latent period (or incubation period) about 2ч4 days, as was earlier defined for different variants PtV, which were isolated from samples of water and mussels of Black Sea environment [6ч9].

In a result the study of 41 united samples has allowed to isolate 16 variants of *Phaeodactilum tricornutum* algae virus and no any virus variant to microseaweed *Tetraselmis viridis* and *Dunaliella viridis*. Thus, about 40 % of the investigated united clinical samples were contaminated by marine virus — PtV — alga virus of *Phaeodactilum tricornutum*.

For the time being we don’t know about the role which this virus has in gynecological diseases, but we think that this fact of discovery of algae viruses in clinical material of women is very interesting and it is an evidence of a new unknown ways in ecology of marine viruses.

Thus, our hypothesis of an exchange of viruses between a land and hydrosphere [7] has received one more acknowledgement (confirmation) — fact of drift (fact of inoculation) of marine viruses in organism of the inhabitants of a land with possible (probable) development of a new ecological niche (women’s vagina) and new host — man, that is reflected in a fig. 2.

**Conclusions.** For the first time from a clinical material were isolated algae viruses. This fact testifies about probable role of algae viruses in a human pathology and establishes a new unknown ways in ecology of marine viruses and demands the further extended researches. The received results are the new acknowledgement of our hypothesis of an exchange of viruses between a land and hydrosphere. From positions of public health services the revealed facts require the
further extended researches in view of the various physiological statuses of the women (immunity, hormonal background) and with positions of ecology situation of their environment (different pollution of cities, regions, ponds and etc.).

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