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The antiproliferative activity of the Holocene grain wash-out can be enhanced by HuIFN-Alpha N3 but not with the rHuIFN-Alpha 2

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Holocene era denotes the time period of 9560 and 9300 B.C. It started by withdrawal of pleistocene glacier. During this time huge amount of holocene sands occurred. For them it was found, that they contain large amount of fairly uniform holocene minerals. When grained, they show quite unusual biological/microbiological activity, like antifungal against *Peronospora* sp., *Phytophthora* sp..

The performed experiments were aimed to find if the holocene grain-wash out shows the antiproliferative activity against CaCo-2 cells, and if this activity can be enhanced by Interferon (IFN). During the experiments the samples from river Drava sands, near Koprivnica were used. To grain them the "Star-mix" technology was used. As the results the fine grain with 60-80 µm size was obtained. The following wash-out ("suspension") were prepared: (1) 10% Monoethylene-glycole; (2) 10% PBS (Phosphate buffer saline), pH = 7.2. Two types of human interferons were used: Hu IFN-Alpha N3 and rHuIFN-Alpha 2. During the experiments different combinations of holocene grain-wash out and IFNs were tested: (1) 10% Monoethylene-glycole; (2) 10% PBS; (3) Hu IFN-Alpha N3; (4) rHu IFN-Alpha 2, (5) combinations with IFN in ratio 2:1, 1:2 and 1:1.

The following results were obtained: (1) AP activity of samples (Monoethylene – glycole : 4,6 (well with ca. 50% growth inhibition), (PBS : 1,8); (2) AP activity of IFNs: HuIFN-Alpha N3 (500 AV units/ml): 4,6; (3) AP activity of rHuIFN-Alpha 2 (500 AV units/ml): 3,8; (4) Sample + HuIFN-Alpha N3: (1:1) = 10,3; (1:2) = 8,5 ; (2:1) = 12 ; (5) Sample + rHuIFN-Alpha 2: (1:1) = 5,4; (1:2) = 3,5 and (2:1) = 5,1.

From the presented experiments it can be concluded: (1) Basically the holocene grain-wash out shows the antiproliferative activity against CaCo-2 cells in vitro. Monoethylene-glycole much higher than PBS. (2) This AP activity can be enhanced (in vitro) up to four times using the HuIFN-Alpha N3. (3) Such an enhancement cannot be obtained in the same system using the rHuIFN-Alpha 2. (4) It seems, that the single component (subtype) of rIFN cannot affect the AP activity of holocene grain-wash out. (5) For the optimal enhancement (in vitro) different IFNs subtypes are needed.

Keywords: holocene grain, wash-out, CaCo-2 cells, antiproliferative activity, interferons