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MicroRNAs in vitreous humor from patients with ocular disease : preliminary results

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Abstract

Purpose: Based on evidence that microRNAs (miRNAs) were found in many biological fluids (e.g., urine, saliva, pleural fluid), we sought to detect their presence and analyse their profile in vitreous humor (VH) from patients affected by different ocular diseases.

Methods: miRNAs were purified from VH samples taken during vitrectomy, by using Qiagen miRNeasy Mini Kit. The expression profile on 745 miRNAs was carried out by using TaqMan Low Density Array. Single TaqMan expression assays was performed on 18 VH samples (six each from patients with choroidal melanomas, retinal detachment, or macular hole, respectively), for miRNAs commonly expressed in serum or retinal cells: let-7b, mir-21, mir-26a, mir-146a, miR-199-3p, mir-210, mir-374a*, mir-532-5p. RNA extracted from serum of six healthy donors or from formalin-fixed, paraffin-embedded samples of choroidal melanocytes from four uveal melanomas (epithelioid cells) and from three unaffected eyes were used as controls.

Results: We have identified the presence of 94 circulating small RNAs in vitreous, some of which (miR-9, miR-9*, miR-125a-3p, miR-184, miR-211, miR-214, miR-302c, miR-452, miR-628, miR-639) are particularly abundant in VH but down-represented or not detectable in serum. Mir-146a and mir-26a were overexpressed more than three folds in VH from uveal melanoma patients with respect to the other pathological groups (Wilcoxon signed-rank test, p-value <0.05).

Conclusions: Our experimental data suggest that a specific set of circulating miRNAs is secreted in vitreous, which is quite different than miRNA pattern in serum, and that the quantity of vitreal miRNAs could change, depending on the pathologies of the eye.

Keywords: 763 vitreous