# METHOD FOR SETTING A PROTEIN BIOMARKERS SET FOR DIAGNOSING GLIOBLASTOMA

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The invention relates to an assay for identifying biomarkers by analyzing the protein profile in serum samples from patients with glioblastoma. The method according to the invention consists in the preparation and acquisition of the chips, after which the measurement protocol is applied to the protein samples, and analyzes from which a group of relevant serial clusters is identified, selecting a set of 4 biomarkers S100A8, S100A9, CXCL4, CXCL7 showing statistically significant differences between brain tumor patients and healthy subjects.

**Fields of application: Medicine**

- the identification of a set of biomarkers, which are not yet addressed in current medical practice, which is essential, all the more so since there is little data in the specialized literature regarding their role in tumor pathology in general, even more so in the pathology of high-grade gliomas high.

- identification of some biomarkers by analyzing the protein profile in glioblastomas by SELDI-ToF MS mass spectrometry.
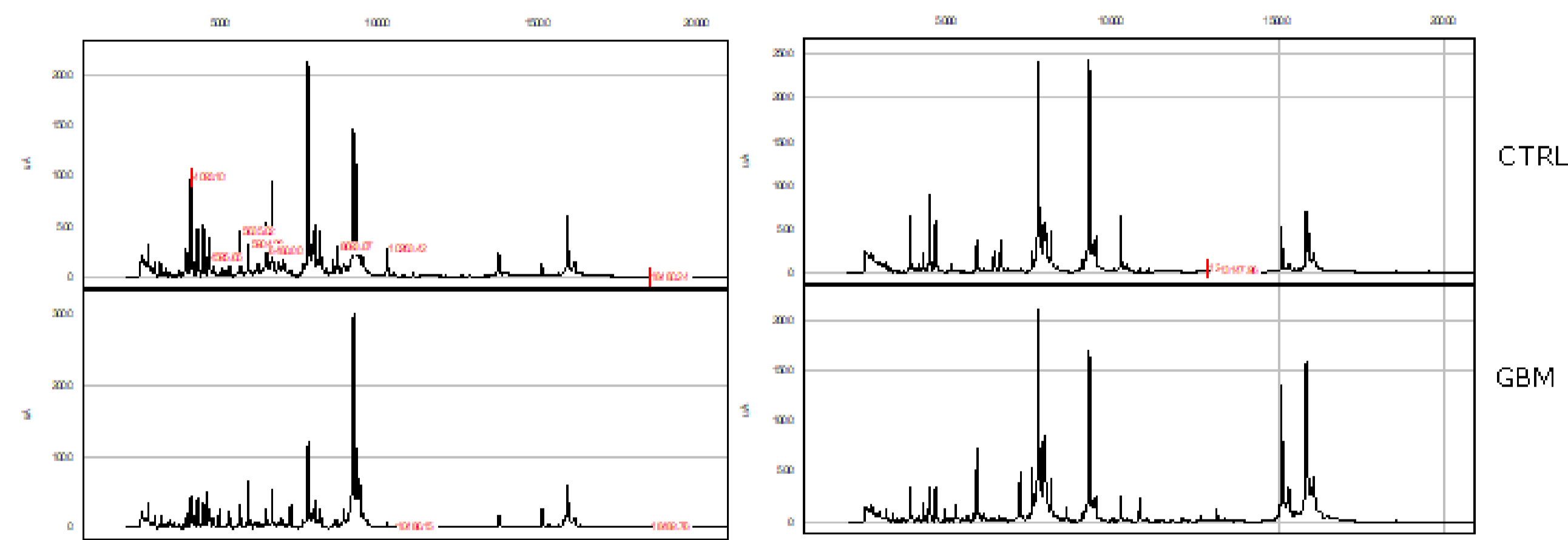


**Figure 1.** Representative SELDI-TOF mass spectra obtained for CM10 chips at pH 4.5 and pH 6.0 (control/glioblastoma).
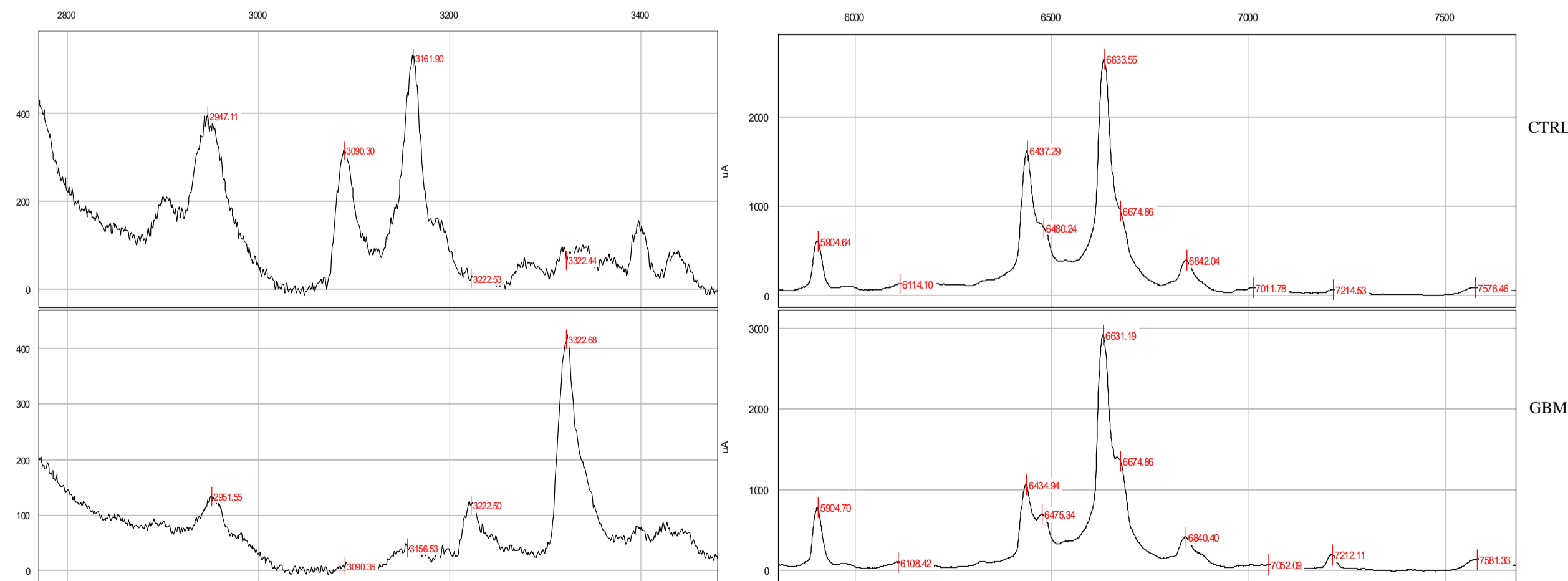


**Figure 2.** Spectra with different relative intensities - peaks with m/z ratios of 2948.04 and 6440.01 are significantly decreased in the serum of glioblastoma patients compared to controls.
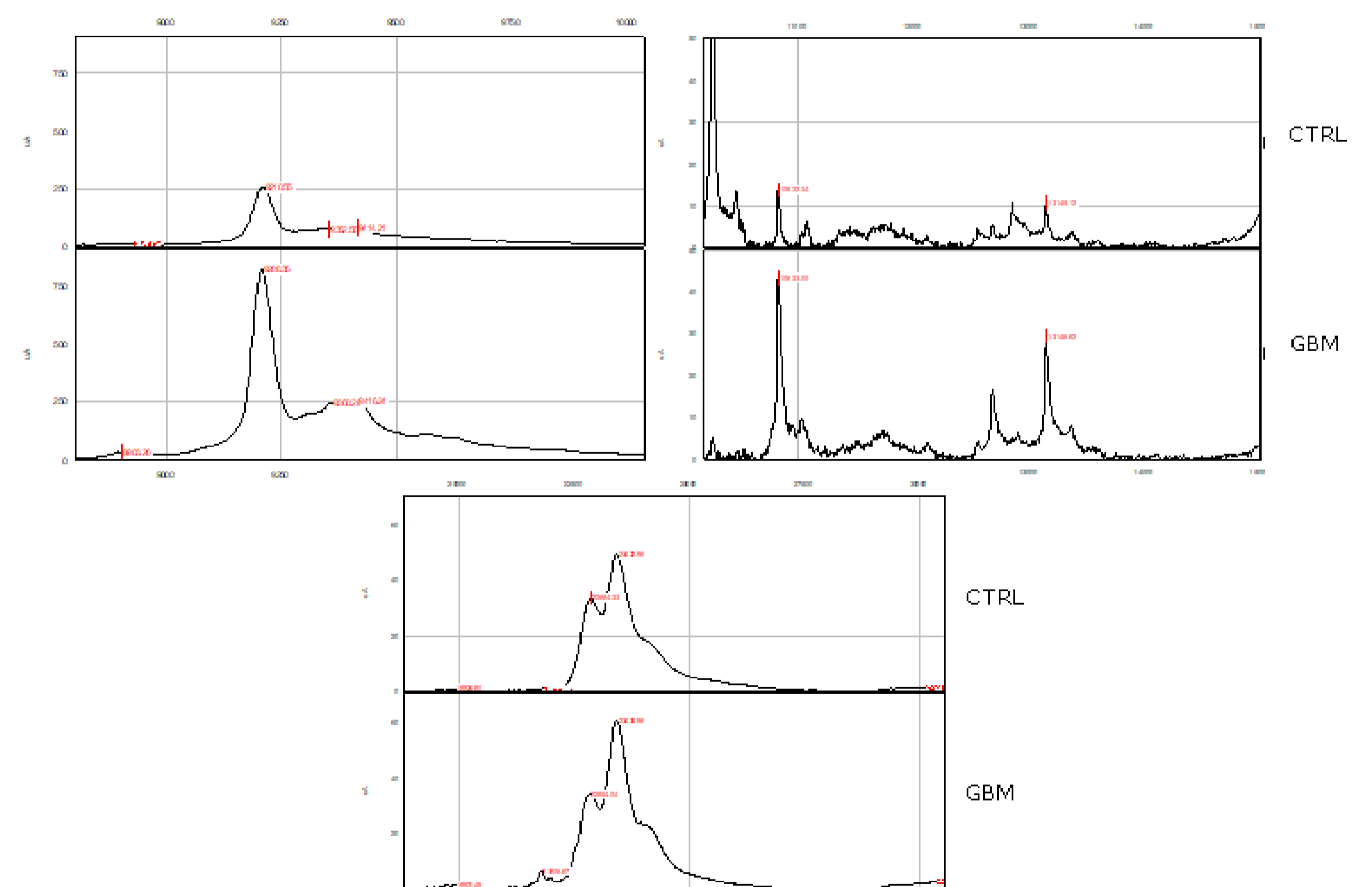


**Figure 3.** Spectra with different relative intensities - peaks with m/z ratios of 9192.84, 10836.09, 13153.66 and 23466.27 are significantly increased in the serum of glioblastoma patients compared to controls.

| Nr. | Mass (m/z) | p Value | ROC | Differential expression in glioblastoma |
|---|---|---|---|---|
| 1 | 8143,15 | <0,001 | 0,747619 | ↓ |
| 2 | 2948,04 | <0,005 | 0,673333 | ↓ |
| 3 | 23466,27 | <0,05 | 0,648571 | ↑ |
| 4 | 6440,01 | <0,05 | 0,648571 | ↓ |
| 5 | 9192,84 | <0,001 | 0,859048 | ↑ |
| 6 | 3092,01 | <0,001 | 0,859048 | ↓ |
| 7 | 3892,55 | <0,001 | 0,908571 | ↓ |
| 8 | 10836,09 | <0,001 | 0,811619 | ↑ |
| 9 | 13153,66 | <0,001 | 0,911429 | ↑ |
| 10 | 15868,12 | 0,001 | 0,829524 | ↑ |
| 11 | 28114,62 | <0,001 | 0,809524 | ↑ |

**Table 1.** Protein clusters differentially expressed in glioblastoma compared to control (m/z:); ↑: Protein expression level was increased in glioblastoma compared to control; ↓: Protein expression level was decreased in glioblastoma compared to control).

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