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ROLE OF DBP & FGG PROTEINS IN OBESE SCHIZOPHRENIA: A PROTEOMIC STUDY

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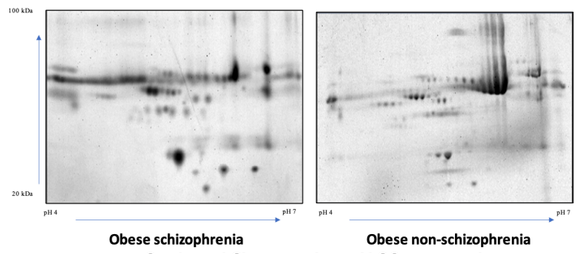
INTRODUCTION

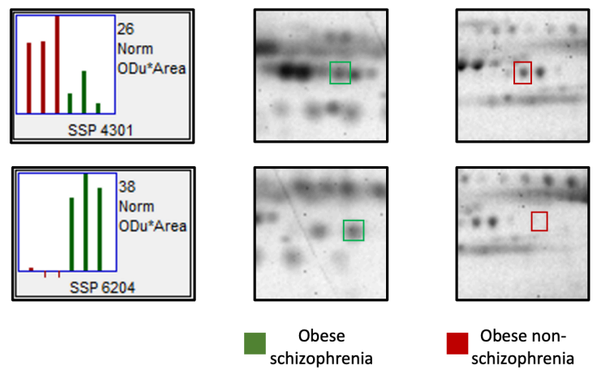
- Both schizophrenia and obesity are complicated conditions that can have a major negative impact on an individual's health and quality of life.
- Obesity heightens the health risks and contributes to elevated morbidity & mortality in schizophrenia [1,2].
- Even though each condition has been thoroughly researched on its own, the intersection of obesity & schizophrenia remains underexplored, particularly at the proteomic level [3,4].
- This study aims to compare the protein profiles of obese schizophrenia and obese non-schizophrenia subjects. Then, the role of the differently expressed proteins was determined using a publicly available protein database and literature search.

RESULTS

- Representative of two-dimensional electrophoresis (2-DE) gel images of plasma proteomic profiling:



- Representative patterns of significantly differently expressed protein spots (*p-value* <0.05):



- The proteins identified through Liquid Chromatography with Tandem Mass Spectrometry (LC-MS/MS) were:

ID	Protein	Accession number	Molecular Weight	Isoelectric Point	Sequence coverage
SSP 4301	**Vitamin D binding protein (DBP)**	P02774	55.1 kDa	5.74	45 %
SSP 6204	**Fibrinogen gamma chain (FGG)**	P02679	51.5 kDa	5.62	65 %

- DBP was underexpressed, while FGG was overexpressed in obese schizophrenia compared to obese non-schizophrenia.

CONCLUSION

- DBP & FGG play significant roles in linking obesity and schizophrenia.
- The underexpression of DBP suggests reduced vitamin D bioavailability & exacerbates metabolic disturbances.
- The overexpression of FGG indicates increased inflammation & coagulation tendencies, heightening cardiovascular & metabolic risks.

ACKNOWLEDGEMENT

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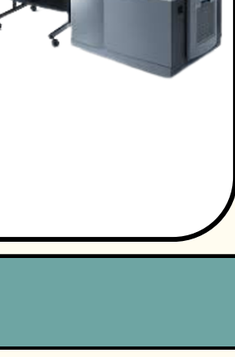
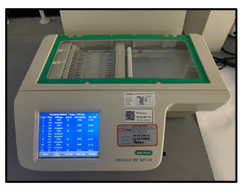
METHODS

1 Sample Pooling: Plasma from 10 subjects from each group were pooled.

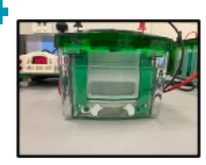
2 Sample Preparation: Protein extraction and preparation for 2-DE





3 1st Dimension of 2-DE: Protein separation according isoelectric point using IPG strip for Isoelectric Focusing

4 2nd Dimension of 2-DE: Protein separation according molecular weight using SDS-PAGE



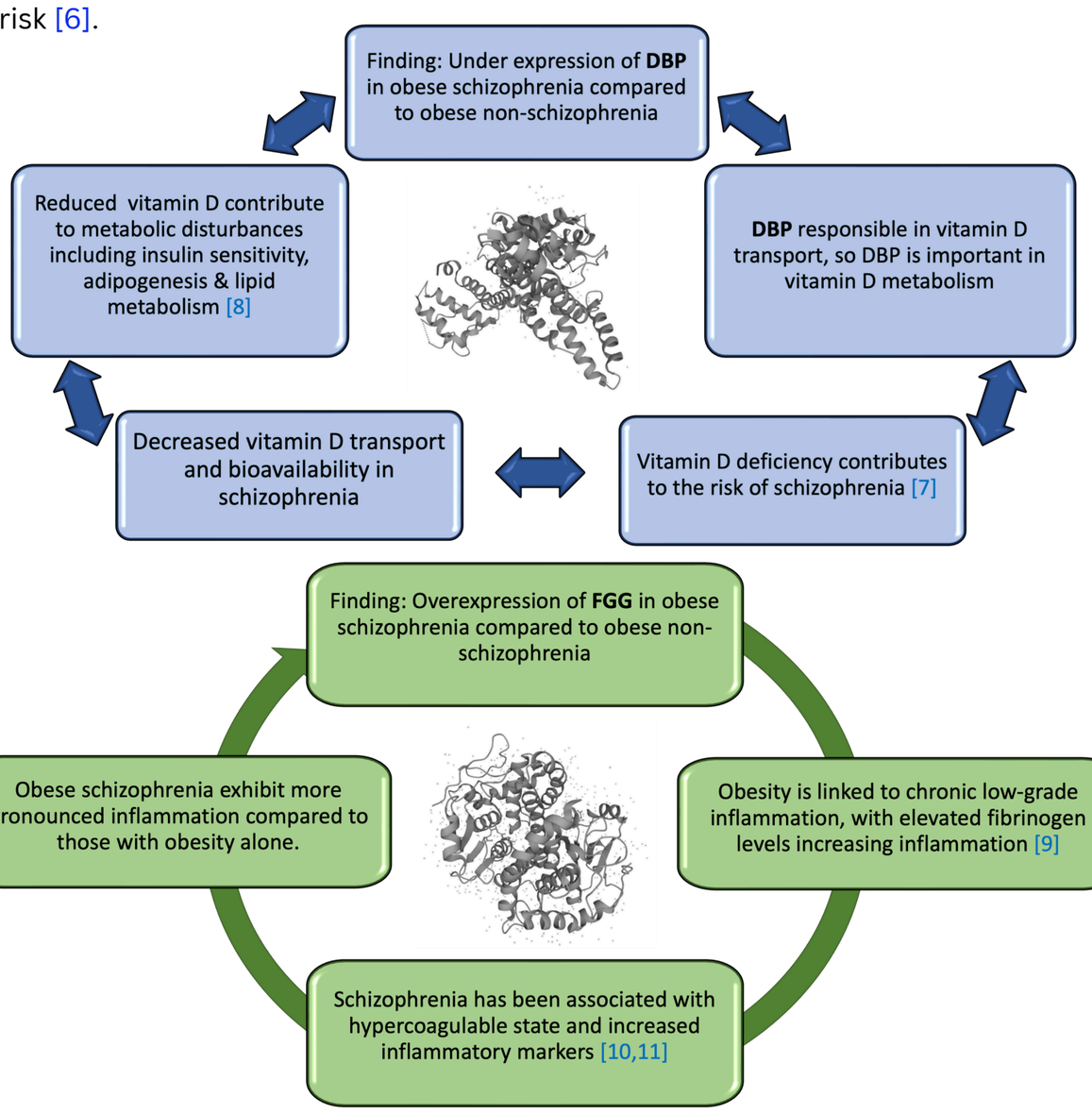
5 Protein Analysis: Gel scanning to capture images of separated protein spots then analysed using PDQuest software

6 Protein Identification: Protein spots of interest were excised from gel and identified by LC-MS/MS

7 Role of Protein: Verification of identified protein & its role using UniProtKB database

DISCUSSION

- DBP has been studied in relation to obesity, with a notable association between DBP levels and various metabolic factors in obesity.
- A study demonstrated the protective role of DBP in obesity specifically due to improved insulin sensitivity [5].
- Other study suggested that higher DBP level are associated with increase obesity risk [6].



- This suggests FGG as a potential biomarker for assessing the severity of inflammation and coagulation disturbances in this group.
- Therefore, it is important to target inflammation and coagulation pathways in managing the cardiovascular risks associated with obesity and schizophrenia.