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**ANTIPSYCHOTICS PROMOTE THE DIFFERENTIATION OF OLIGODENDROCYTE PROGENITOR CELLS BY REGULATING OLIGODENDROCYTE LINEAGE TRANSCRIPTION FACTORS 1 AND 2**

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### Introduction

Antipsychotic drugs (APDs) are the first-line pharmacological treatments for schizophrenia. Recent human studies have found that myelin integrity could be improved by APD treatment in schizophrenia patients. Previous studies indicated that regulation of oligodendrocyte development and function may be a novel target for APDs.

### Aims

The aim of this current study was to examine the possible effects of the antipsychotic drugs (APDs) haloperidol (HAL), olanzapine (OLA), and quetiapine (QUE) on the development of oligodendroglial lineage cells.

### Main methods

CG4 cells, an oligodendrocyte progenitor cell line, were treated with various concentrations of HAL, OLA, or QUE for specific periods. The proliferation and differentiation of the CG4 cells were measured. The regulation of CG4 cell differentiation by oligodendrocyte lineage transcription factors 1 and 2 (Olig1 and Olig2) was examined.

Results The APDs used in this study had no effect on the proliferation of CG4 cells. The APDs elevated the expression of 2',3'-cyclic nucleotide 3'-phosphodiesterase (CNP), a specific marker of oligodendrocytes, and promoted the CG4 cells to differentiate into CNP positive oligodendrocytes. QUE and OLA increased the expression of Olig1 and Olig2 whereas HAL only increased the expression of Olig2.

### Conclusions

Our findings suggest that oligodendrocyte development is a target of HAL, OLA, and QUE and provide further evidence of the important role of oligodendrocytes in the pathophysiology and treatment of schizophrenia. They also indicate that the expression level of oligodendrocyte/myelin-related genes could be profoundly affected by APDs.