Clinical Trial Report: Evaluation of AGI-101 in Glycemic Control of Type 2 Diabetes

Introduction:
This clinical trial assesses the effectiveness of AGI-101, a novel oral medication, in improving glycemic control in patients with type 2 diabetes mellitus. Type 2 diabetes is a chronic condition characterized by inadequate glycemic regulation, leading to various health complications. AGI-101 is a once-daily, oral dual GLP-1 receptor agonist and glucagon receptor antagonist that has demonstrated potential in preclinical studies for improving glucose tolerance and reducing blood sugar levels. This randomized, controlled trial aims to evaluate AGI-101's impact on glycemic control and other cardiovascular risk factors associated with type 2 diabetes.

Methods:
Study Design:
A total of 90 participants with type 2 diabetes inadequately controlled on metformin therapy were enrolled in this 12-week, randomized, parallel-group, placebo-controlled trial. Participants were randomized in a 2:1 ratio to receive AGI-101 (n=60) or a matching placebo (n=30) once daily in addition to their ongoing metformin treatment.

Inclusion Criteria:
• Age above 18 years
• Diagnosis of type 2 diabetes mellitus
• HbA1c level between 7.0% and 10.0% despite metformin therapy
• Body Mass Index (BMI) less than 40 kg/m²

Exclusion Criteria:
• Type 1 diabetes or other specific types of diabetes
• History of pancreatitis or severe gastrointestinal diseases
• Uncontrolled hypertension or cardiovascular disease
• Renal impairment (eGFR <60 ml/min)
• Pregnancy or lactation

Outcome Measures:
The primary outcome measure was the change in hemoglobin A1c (HbA1c) levels from baseline to Week 12. Secondary outcome measures included fasting plasma glucose (FPG) levels, body weight, blood pressure, and lipid profiles. Safety assessments included adverse event monitoring, clinical laboratory evaluations, and vital sign measurements.

Results:
Primary Outcome:
AGI-101 resulted in a significant reduction in HbA1c levels compared to the placebo group. The mean change in HbA1c from baseline to Week 12 was -0.7% in the AGI-101 group versus -0.2% in the placebo group ($p<0.001$).

Secondary Outcomes:
• Fasting plasma glucose levels significantly decreased in the AGI-101 group, with a mean reduction of 14.2 mg/dL compared to 3.1 mg/dL in the placebo group ($p<0.001$).
• Body weight decreased by a mean of 2.1 kg in the AGI-101 group, while no significant change was observed in the placebo group ($p<0.05$).
• AGI-101 also led to small but significant reductions in systolic blood pressure (-2.8 mmHg) and diastolic blood pressure (-1.6 mmHg) compared to baseline ($p<0.01$ for both).
• Lipid profiles showed a favorable trend, with a mean reduction of 6.3 mg/dL in total cholesterol and 5.2 mg/dL in LDL cholesterol in the AGI-101 group.

Safety:
AGI-101 was generally safe and well-tolerated. The most common adverse events were gastrointestinal in nature, including nausea, diarrhea, and abdominal discomfort, which were mostly mild and transient. No severe adverse events related to the study drug were reported. Clinical laboratory tests did not reveal any safety concerns.

Conclusion:
AGI-101, as an adjunct to metformin therapy, significantly improved glycemic control in patients with type 2 diabetes. Additionally, it demonstrated positive effects on body weight, blood pressure, and lipid profiles. The drug's safety profile was acceptable, with manageable mild adverse events. These findings suggest that AGI-101 could be a promising new option for improving glycemic control in type 2 diabetes patients.

However, further studies with larger datasets and longer durations are needed to confirm the long-term efficacy and safety of AGI-101 in the management of type 2 diabetes.

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