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**ADMINISTRATIVE INFORMATION**

**Support** - None.

**Review Stage at time of this submission** - Formal screening of search results against eligibility criteria.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202570060

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 July 2025 and was last updated on 15 July 2025.

**INTRODUCTION**

**Review question / Objective** Thus, this review comprehensively synthesizes emerging biochemicals linked to ADHD, drawing predominantly from the latest diagnostic accuracy studies. The identified biomarkers are categorized into 6 main groups. Biochemical markers such as neurotransmitters and their receptors, neurotrophic factors, serum electrolytes, and inflammation-related indicators are explored. In addition to presenting these findings, the article critically assesses the current limitations of using these biomarkers in clinical settings and outlines promising future directions for advancing their practical applications.

**Condition being studied** Studies about biochemicals for ADHD diagnosis.

**METHODS**

**Participant or population** (1) Patients diagnosed with ADHD who are under 18 years of age; (2) Studies about the diagnostic performance of chemical biomarkers in ADHD patients; (3) There was no limitation on the sample size.

**Intervention** Not applicable.

**Comparator** Not applicable.

**Study designs to be included** No limitations.

**Eligibility criteria**

The exclusion criteria were as follows:

- (1) Irrelevant study topic;
- (2) Duplicate studies, animal and experimental studies, reviews, conference articles, expert

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opinions, abstracts, or case reports without controls;

(3) No sufficient information for fourfold data table to conduct meta-analysis.

**Information sources** Pubmed, CNKI.

**Main outcome(s)** Sensitivity , specificity, positive likelihood ratio (PLR) , negative likelihood ratio (NLR),diagnostic odds ratio (DOR) , area under the curve (AUC).

**Quality assessment / Risk of bias analysis** QUADAS-2 tool. Sensitivity analysis, subgroup analysis, publication bias.

**Strategy of data synthesis** STATA 12.0 (College Station, TX), RevMan Manager 5.4 (Cochrane, Oxford, UK), and Getdata software.To assess the heterogeneity among included studies, both Cochran's Q test and  $I^2$  test were utilized. Based on the test results, an appropriate effect model was selected: when the studies showed no significant heterogeneity ( $I^2 < 50\%$  and  $p \geq 0.05$ ), a fixed-effects model was applied for the meta-analysis; conversely, when significant heterogeneity was detected ( $I^2 \geq 50\%$  and  $p < 0.05$ ), a random-effects model was adopted instead.

**Subgroup analysis** Stata software. According to specimen, diagnosis criteria, sample size, expression.

**Sensitivity analysis** Stata software.

**Country(ies) involved** China - Sichuan University.

**Keywords** meta-analysis, ADHD, diagnosis, biochemicals.

**Contributions of each author**

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