# Supplementary Material 1. PRISMA Checklists.

| Section/topic | # | Checklist item | Reported on page # |
|---------------|---|----------------|-------------------|
| **TITLE**     | 1 | Identify the report as a systematic review, meta-analysis, or both. | Title (P1) |
| **ABSTRACT**  | 2 | Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number. | Not applicable (P2) |
| **INTRODUCTION** | 3 | Describe the rationale for the review in the context of what is already known. | Introduction (P3) |
|               | 4 | Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS). | Introduction (P4–5) |
| **METHODS**   | 5 | Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number. | Unpublished document circulated to collaborators (P5) |
| Protocol and registration | 6 | Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale. | Methods (P6) |
| Eligibility criteria | 7 | Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched. | Methods (P5) |
| Information sources | 8 | Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated. | Methods (P5) |
| Search | 9 | State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis). | Methods (P5) |
| Study selection | 10 | Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators. | Methods (P6) |
| Data collection process | 11 | List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made. | Methods (P6) |
| Data items | 12 | Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis. | Methods (P7) |
| Risk of bias in individual studies | 13 | State the principal summary measures (e.g., risk ratio, difference in means). | Methods (P7) |
| Summary measures | 14 | Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., F) for each meta-analysis. | Methods (P7–8) |
| Synthesis of results | 15 | Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies). | Results (P7) |
| Risk of bias across studies | 16 | Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified. | Methods Results (P7) |
| RESULTS                                                                 |   | DISCUSSION                                                                 |   | FUNDING                                                                 |
|------------------------------------------------------------------------|---|---------------------------------------------------------------------------|---|------------------------------------------------------------------------|
| Study selection                                                        17| Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram. | Methods Figure 1 (P8) |   | Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review. | Declared on online submission system (P17) |
| Study characteristics                                                  18| For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations. | Table 1 (P8–9) |   |                                                                         |   |
| Risk of bias within studies                                            19| Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12). | Figures 2–3 (P9) |   |                                                                         |   |
| Results of individual studies                                          20| For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot. | Figures 4–5 (P9) |   |                                                                         |   |
| Synthesis of results                                                   21| Present results of each meta-analysis done, including confidence intervals and measures of consistency. | Table 2 (P9) |   |                                                                         |   |
| Risk of bias across studies                                            22| Present results of any assessment of risk of bias across studies (see Item 15). | Figure 9 (P9–10) |   |                                                                         |   |
| Additional analysis                                                    23| Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]). | Tables 7–8, 9–10 (P10–11) |   |                                                                         |   |

**DISCUSSION**

| Summary of evidence                                                    24| Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers). | Discussion (P12–15) |   |                                                                         |   |
| Limitations                                                            25| Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias). | Discussion (P15) |   |                                                                         |   |
| Conclusions                                                            26| Provide a general interpretation of the results in the context of other evidence, and implications for future research. | Discussion (P16) |   |                                                                         |   |

**FUNDING**

| Funding                                                                27| Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review. | Declared on online submission system (P17) |   |                                                                         |   |
Supplementary Material 2. Search strategy for each database.

**PubMed**

(((liver cancer [MeSH Terms])) OR (hepatoma[MeSH Terms])) OR (hepatic carcinoma [MeSH Terms])) OR (hepatocellular carcinoma [MeSH Terms])) OR (HCC) AND ((((((α-AFP [Title])) OR (fucosylated fraction of alpha-fetoprotein [Title])) OR (fucosylated fraction of α-fetoprotein [Title])) OR (alpha-fetoprotein [Title])) OR (α-fetoprotein [Title])) OR (AFP-L3 [Title])) OR (AFP )) OR (alpha-AFP)))).

**Web of science**

Step 1: liver cancer (Topic) or hepatoma (Topic) or hepatic carcinoma (Topic) or hepatocellular carcinoma (Topic) or HCC (Topic) Databases = WOS, BCI, KJD, MEDLINE, RSCI, SCIELO Timespan = All years.

Search language = Auto

Step 2: α-AFP (Topic) or fucosylated fraction of alpha-fetoprotein (Topic) or fucosylated fraction of α-fetoprotein (Topic) or alpha-fetoprotein (Topic) or α-fetoprotein (Topic) or AFP-L3 (Topic) or alpha-AFP (Topic).

Databases = WOS, BCI, KJD, MEDLINE, RSCI, SCIELO Timespan = All years

Search language = Auto

Step 3: #1 AND #2.

**Embase**

Step 1: 'liver cancer 'ti,ab,kw OR 'hepatoma 'ti,ab,kw OR 'hepatic carcinoma 'ti,ab,kw OR 'hepatocellular carcinoma ':ti,ab,kw OR HCC:ti,ab,kw.

Step 2: α-AFP:ti,ab,kw OR fucosylated fraction of alpha-fetoprotein:ti,ab,kw OR fucosylated fraction of α-fetoprotein:ti,ab,kw OR alpha-fetoprotein:ti,ab,kw OR α-fetoprotein:ti,ab,kw OR 'AFP-L3':ti,ab,kw OR alpha-AFP:ti,ab,kw.

Step 3: #1 AND #2.

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(肝癌 OR HCC OR PHC) AND (AFP-L3 OR alpha-AFP OR α-AFP OR AFP OR 甲胎蛋白 OR 甲胎蛋白异质体).
Supplementary Material 3. The references list of study included in the meta-analysis.

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