Studies from databases/registers **(n = 877)**

Embase (n = 143)

PubMed (n = 94)

Web of Science (n = 83)

First search before 2023 (n = 557), duplicates had been removed before importing (n = 309)

References from other sources **(n = 0 )**

Citation searching (n = 0 )

Grey literature (n = 0 )

**Identification**

Studies excluded **(n = 476)**

Studies not retrieved **(n = 0)**

Studies assessed for eligibility **(n = 279)**

Studies sought for retrieval **(n = 279)**

Studies screened **(n = 755)**

References removed **(n = 122)**

Duplicates identified manually (n = 0)

Duplicates identified by Covidence (n = 122)

Marked as ineligible by automation tools (n = 0)

Other reasons (n = )

**Screening**

Studies excluded **(n = 176)**

Review (n = 45)

no quat (n = 3)

dublicate (n = 3)

could not find (n = 8)

Quat combined (n = 45)

wrong language (n = 22)

No log data (n = 21)

Wrong study design (n = 22)

QAC concentrations are unclear reported (n = 5)

PCR with growing viruses after deactivation (n = 2)

**Included**

Studies included in review **(n = 103)**