Background: Type 2 diabetes mellitus (T2DM) makes it difficult for the body to metabolize glucose, which is manifested with a high HbA1c-level. An increase in the HbA1c-level translates to a higher risk of developing disease-related complications. Resistant starch (RS) has been shown to lower the post-prandial blood glucose level, but whether it affects the HbA1c-level is not yet clear. RS has also shown beneficial long-term effects on the glucose homeostasis and insulin sensitivity in animal studies and in human studies on healthy individuals and individuals with the metabolic syndrome.

Objective: The aim of this study was to investigate the scientific evidence regarding the effect of resistant starch on the HbA1c-level in humans with type 2 diabetes mellitus.

Search strategy: The literature search was conducted with the help of the databases PubMed, Scopus and Cochrane Library. The following search terms were used: resistant starch, diabetes, randomized, glucose, HbA1c, insulin, metabolic syndrome, HAM-RS2 and hemoglobin. Different combinations of the above-mentioned terms were used in the search.

Selection criteria: The inclusion criteria for this review was randomized controlled trials (RCTs) conducted on adult humans, written in English or Swedish. The study length had to be at least eight weeks. The subjects in the study population had to be diagnosed with T2DM. Moreover, they were not to have reduced bowel function or heart disease. The clinical endpoint was HbA1c.

Data collection and analysis: Three RCTs were included in the review. The quality control of the individual studies was conducted with the help of “Mall för kvalitetsgranskning av randomiserade studier”, published by SBU. The assessment of the studies weighted evidence grading for the endpoint was conducted with the help of ”Underlag för sammanvägd bedömning enligt GRADE”, published by the University of Gothenburg.

Main results: Two of the included studies show a lower HbA1c-level in the intervention groups compared to the control groups after an intake of RS, while the third study show no such effect. Whether the difference in HbA1c is clinically relevant or not is difficult to assess.

Conclusion: The strength of evidence regarding the effect of the intake of RS on the HbA1c-level in patients with T2DM is low (++). The number of studies examining the effect is scarce and questions remain regarding metabolism and effects of RS in humans. More studies are needed to bring clarification.

Keywords: Resistant starch, RS2, HbA1c, diabetes mellitus.