Zea Mays L to The Decreasing Blood Glucose Levels in Animal Trial (Rat) with Diabetes Mellitus: Systematic Review

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Abstract: Background: Diabetes mellitus (DM) is one of chronic disease that require long treatments, highly cost treatment, in addition DM prevalence rate is increased continuously. Pharmacological therapy given to DM patients has not been able to guarantee cure to DM patients such as Zea Mays L is know as one of traditional herbal medicine in China which has many traits such as hypoglycemic, anti tumor, anti oxidant, etc. Method: This systematic review begins with the selection of topic, then determines keywords to search the journals from various databases such as Google Scholar, ProQuest, Pub Med, Science Direct, Journal Of Nursing Science, and National Journal. Limited from 2009 to 2017, the English keywords use are “Zea mays L”, “corn silk”, “corn silk for diabetic”, “diabetic and herbal”. Result: From 16 journal conducted review the number of samples vary between 20 to 80 animals trials that have been treated with various corn silk extract and can be used as herbal therapy alternative to decrease blood glucose levels in animal trial (rat) with DM. Conclusion: Zea mays L is very significant to decrease blood glucose levels in animal trial (rat) with DM.

1 BACKGROUND

Diabetes is one of the non-communicable diseases that became one of the health issues of concern in the community. In Indonesia DM is a serious threat to health development because it can cause blindness, kidney failure, to the risk of heart disease (Ghada et al. 2013). Diabetes is a disease disorder of endocrine metabolism caused by decreased amount of insulin production in the body (Pan et al. 2017). In cases of diabetes diabetes 90% is a case of diabetes type 2 (W. Zhao et al. 2012). Diabetes mellitus is a chronic disease that affects about 5 - 10% of the world's population. Estimated global estimate for diabetes is 171 million in 2000 and will increase to 366 million by 2030 (Ahangarpour et al. 2017). Based on the annual report of East Java Health Office in 2012, Diabetes mellitus is the most degenerative disease with 102,399 cases. Diabetes mellitus is one of the chronic diseases that require long treatment, expensive treatment financing, besides the prevalence of diabetes mellitus continues to increase. The consequences or complications of diabetes mellitus can be long-term therefore, it is necessary to make every diabetics mellitus get the right diagnosis and treatment. The most important therapy of diabetes mellitus is to regulate the diet of the patient in cooperation with a nutritionist to determine what foods can be consumed. In general this drug is a good oral antidiabetic for the therapy of type-2 DM or NIDDM. One of the most widely used drugs in Indonesia is glibenclamide. Pharmacological therapy given to DM patients has not been able to provide a cure guarantee in DM patients. Much research has been done, often the pharmacological therapy done to the patient has failed. This is because DM patients tend to experience boredom due to the use of existing drugs.

Currently, many researches have been developed about herbal medicines. Society has been switched to herbal medicine because it feels safer and easier to get it. Herbal remedies have been widely developed in various countries and become one of the most valuable resources received by the World Health Organization (WHO) (Zhang et al. 2016). Corn is one of three types of crops that are widely cultivated throughout the world. Zea mays L is an abundant waste material worldwide (Chang et al. 2016). Zea mays L known as one of the traditional
herbal medicine in China which has many properties of hypoglycemic, anti-tumor, anti oxidant and others. Meanwhile, Zea mays L also contains various chemical components such as polysaccharides, proteins, flavonoids, alkaloids, tannins, steroids and others (Guo et al. 2009). In previous studies indicating that among all flvanoid components may be considered the major contributors to most therapeutic effects, including anti-activity oxidants, diuritics, and anti-proliferative in human cancer cells and others (Kristover Koloay, Gayatri Citraningtyas 2015). As mentioned that oxidative stress as well as impaired lipid metabolism plays an important role in diabetes other than hyperglycemia, therefore a drug with some efficacy will be much more effective in the treatment of diabetes(Zhang et al. 2016). The purpose of this study is to conduct a systematic review to determine the effectiveness of Zea mays L as one form of alternative herbal plant therapy that can lower blood glucose levels in patients with diabetes millitus. This study is expected to give the idea of further research in the provision of interventions to alternative herbal medicine in patients with diabetes millitus so as to improve the quality of life of patients with diabetes mellitus.

The purpose of this systematic review is to illustrate the effectiveness of Zea mays L)effectiveness of decreased glucose levels in experimental animals (rat)

2 METHODS

The study was a systematic review using RCT (Randomized Controlled Trial) type articles using true laboratory experiments.

Inclusion criteria

Inclusion criteria in this systematic review are mice with diabetes, giving extract Zea mays L, decreased blood glucose levels. And exclusion criteria were patients with diabetes in addition to Zea mays L intervention.

3 RESULTS

Total journal journals that have been reviewed are 36 journals obtained from search strategy, evaluation and methodological assessment. Of the 36 journals, 20 journals were excluded on the grounds of not meeting the inclusion criteria with details: 2 types of systematic reviews, 18 journals containing experimental journals about Zea mays L without treatment in experimental animals, 16 journals both in English and Indonesian which corresponds to the inclusion criteria.

Grouping / Aggregation Review

The aggregation of the results of the review with the design of laboratory experiments is classified into the Benefits of Zea mays L on the decrease of blood glucose levels and increased production of insulin, the benefit of Zea mays L on weight loss, and the benefit of Zea mays L can increase beta cell regeneration.

Aggregation Paper with Experimental Design

The Benefits of Zea mays L against Reduced Blood Glucose Levels and Increased Insulin Production.

The results of a review of the journal found that studies conducted on mouse-fed animals with samples between 20 - 80 rats divided into 2 groups, the treatment group and the control group. In the group treated with extract Zea mays L in the results of a review of 16 journals there were 15 results showed a significant decrease in blood sugar levels (p <0.001) and an increase in insulin production, compared with a control group that only gliben, water distillation was obtained (p <0,05).

Benefits of Zea mays L against Weight Loss

In a review of 16 journals there are 5 journals discussing the effect of Zea mays L giving extract to body weight try. The results of the review found that giving of extract Zea mays L in experimental animals did not affect weight loss with results (p <0.001).

The benefits of corn hair (Zea mays L) can increase the regeneration of beta cells

The results of a review of 16 journals found that giving extract Zea mays L in experimental animals in addition to lowering blood glucose levels can also increase regeneration in beta cells discussed in the journal Vijitha P (Vijitha T P* and Department 2017).

Implications of Practice

The implications of this systematic review of nursing practice, the results can be applied in everyday life because the material is very much and easy to can with a relatively affordable cost in various layers of society.
In nursing practice from the study of 16 journals can be made an educational intervention that alternative herbal therapy using Zea mays L can be used as a reference non-pharmacological therapy for people with diabetes mellitus. Serve as an input for nurses on complementary therapies, since the intervention on the use of non-pharmacological therapy is safer and has minimal side effects compared to pharmacological therapy.

Nurses can also socialize the use of non-pharmacological herb therapy about the effectiveness of Zea mays L to decrease blood glucose levels (Wang et al. 2016), accordingly with a role as a commissioner nurse.

4 CONCLUSIONS

Review of journals that have been done found that therapy using Zea mays L is very significant in lowering blood glucose levels in animals try (mice).

REFERENCES


