Among Adults with Diabetes Type 2, Does Herbal Medicine Help to Stabilize Blood Glucose Compared to No Usage?

**ABSTRACT**

**Diabetes Mellitus type 2 (DM2):**

- Low cost with minimal side effects.
- Improve overall health.
- Reduce diabetic complications (cardiovascular disease, retinal neuropathy).
- Effective control of carbohydrate metabolism (e.g., onion-quercetin, grapevine-resveratrol).
- Improve insulin sensitivity, secretion & hypoglycemic effects (high content of phenolic compounds, flavonoids, terpenoids, alkaloids, and glycosides).

**Herbal medicine (HM) in DM2 treatment:**
- Consider medicinal plants (e.g., cinnamon, aloe vera, bitter gourd, turmeric with garlic, & rosella flower, etc.) in conjunction with conventional medication, especially in the early stages.
- Educate healthcare providers and patients on the concomitant use of HM & prescribed treatments (herb-drug interactions).
- Keep an open-minded approach among healthcare professionals to encourage reports of HM used in DM2 treatments.
- Enhance the acceptability of HM by healthcare providers.
- Revise current diabetic management and make educated choices based on scientific guidelines on the use of medicinal plants (e.g., WHO Guidelines on Good Agricultural and Collection Practices for Medicinal Plants, WHO Monographs on Selected Medicinal Plants).
- Include the patients & their relatives/friends/caregivers in the diabetic care plan.
- Incorporate HM into comprehensive medication reviews in community pharmacies, primary care, nutrition, & lifestyles.
- Facilitate HM integration into national health systems, specifically in developing countries with limited health insurance coverage.
- Community outreach to offer low-cost solutions to the underserved population.
- Increase future systematic reports & carefully designed prospective studies to create safety profiles of commonly used HM in DM2 & promote rational use through evidence-based guidelines and patient-centered approaches.

**LEVEL OF EVIDENCE**

- **LITERATURE REVIEW**
  - Alzahrani et al., 2021: A systematic review and meta-analysis of complementary and alternative medicines (CAM) used in 25 countries, including the United States and some Southeast Asian countries (Malaysia, Singapore, Thailand, Vietnam, Cambodia, 4 databases; from the 1900s to 2021; 1,209 reference articles to the final 3.8
  - Prasopthum et al., 2022: A cross-sectional evaluation of herbal medicine: sample size of 739 patients in four district hospitals in Thailand from October 2018 to October 2019.
  - Salleh et al., 2021: A systematic review of medicinal plants in Association of Southeast Asian Nations (ASEAN) countries: Brunei, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam, Singapore, and Cambodia; 4 databases; from the 1900s to 2021; 1,209 reference articles to the final 3.

- **IMPLEMENTATION**
  - Establish institutional and national policies for herbal use in medical, pharmacological, and nutritional screening.
  - Inquire and encourage patients’ disclosure of herbs used (knowledge, utilization, friends & relatives’ usage)
  - Discuss herb-drug interactions & share safety profiles of the common herbs used.
  - Create and distribute pamphlets (in hospitals, community clinics, and public centers) in the native language with pictures of plants/herbs.
  - Enlist help from naturopathic practitioners, herbalists, nutritionists, and local community health centers for up-to-date patient education, consistent monitoring, effective management of blood glucose, & support for self-management.
  - Monitor the patient’s diabetic profiles (serum glucose, HbA1C%, C-peptide, BMI, electrolyte & metabolic panel, etc.) with an open discussion regarding the concurrent usage of herbs with prescribed medications.
  - Incorporate whole food plant-based nutrition and lifestyle activities that reduce diabetic complications & optimize overall health.

- **EVALUATION**
  - Questions & answers, verbal confirmation, feedback, and acknowledgment of HM education from the patients on every service day: Empower the patient with knowledge to Increase patient satisfaction.
  - Longitudinal medical and laboratory records that track prescribed diabetic medications and concurrent herbs with updates every visit (minimum 3 months for uncontrolled & bi-year for controlled DM2): Improve blood glucose stabilization to Increase long-term physical, mental, emotional, and spiritual health & Reduce secondary comorbidities.
  - Frequent updates on evidence-based research of medicinal plants used in DM2 for patients and healthcare providers: Maximize the benefits of HM in conjunction with conventional treatment to Holistic medicine.

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**REFERENCES**