



RESEARCH ARTICLE

CONCEPT OF DUSHIVISHA (CUMULATIVE TOXICITY) WITH SPECIAL REFERENCE  
TO DIABETES IN PRESENT SCENARIO TOXICITY

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ABSTRACT

Ayurveda described about Acute and Chronic toxicity but also about unique concept of Dushivisha and Garavisha. Now-a-days the incidence and prevalence of diabetes in non-communicable disease increasing as flame of forest. Today we Indians looking towards western world and adopting their culture as well as population explosion, industrialization further added harmful chemicals to our environment and food materials. Such chemicals or toxic substance remains inside for long duration as cumulative effect produces diseases such diabetes, Thyroid disorders, skin diseases, respiratory disorders etc. due to its Dushivisha (cumulative) effect. Hence, the Dushivisha concept is still applicable for diabetes in present era.

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INTRODUCTION

Ayurveda described about *Sthawara* (inanimate) or *Jangam* (animate) *Visha* in details. *Dushivisha* and *Garavisha* represents the cumulative toxicity. Diabetes is disease of pancreas of beta cells due to reduce or absent production of Insulin or due to resistance to insulin at cellular level. *Visha* are the substances are toxic to body may be of acute or chronic duration or as cumulative phase. The effect may produce local sign and symptoms depending upon *Guna* (quality) of *Visha*. *Bhavprakash* described *Dushivisha* into *KrutimVisha* category (Sushruta et al., 1980). Today due to population and changing trend to adopt modern civilization and to cope with need to foods fertilizers, herbicides etc are used also preservative is used for prolonged storage acts as cumulative poison.

Objectives

- To explore the concept of Dushivisha
- To elaborate modern concept of diabetes in relation to various toxicities
- To discuss the relationship between dushivisha and diabetes and management general management protocol.

MATERIALS AND METHODS

Literature review

Dushivisha Ayurvedic review

*Dushivisha* word derived from *Dhushi* and *Visha*. *Dhushi* means 'Having quality to vitiate homeostasis of body and producing toxic effects'. In factor alleviates the sign and symptoms of *Dushivisha* as *Dushitdesha*, *Kala* (time), *Anna* (food), *Diwaswap* (afternoon sleep) etc. *Dushivisha* is further described as poison becomes low potency due to *surya* (sun), *again* (heat), *aatap* (sunlight) etc. *Sushruta* described *poorvaroopa* (predominant stage) as *nidra* (~lazy), *gurutwa* (heaviness), *vijrumbana* (yawning), *harsha* (horripilation), *angmarda* (bodyache). In *Roopaawastha* (signs and symptoms) as *atisara*, *vigandhg* (~foul smell diarrhea), *pipasa* (~thirst), *murcha* (syncope), *chhardi* (emesis), *gadgadavak* (~dysarthria), *udar* (~ascites) etc. In *upadravas* (complications) described by *sushruta* as *jwara* (fever), *hikka* (hiccough), *aayama* (abdominal distension), *shukrakshaya* (~oligospermia), *Shopha* (edema over the body), *hrudroga* (cardiac disorder), *unmad* (psychological and neurological disorders), *vepathu* (tremors), *murcha* (unconsciousness) etc.

Modern concept on Dushivisha

**Chronic toxicity:** Chronic toxicity when a toxic substance ingested or produces inside and taken for long duration and on repeated exposure accumulates inside the body and when get

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toxic level inside the body produces toxic sign and symptoms. Chronic toxicity produces mainly Endocrine disease such as diabetes, thyroid disorder, infertility and also many multisystem disorders. Today due to industrialization and herbicides, fertilizers, preservatives used to cope up with population explosion added toxic chemicals to our water, food, soil and environment. In junk food there are many poisonous chemicals but least amount of magnesium and selenium chemicals which are need to diabetic patient. Cigarette smoke, coal fire from power plant, home heating system added dioxins and furans to environment. Burning of plastic materials (PVC), pesticides treated waste also added dioxins and furans to environment. Soft drinks contents zero level of benzene, which is carcinogen but still contents 5 to 138 parts billion. Sodium benzoate, potassium benzoate and ascorbic acid used to preserve soft drinks. Benzene is produces when reacts both reacts with each other. It is also stimulates HPA axis. Corticoids are related to produce diabetes due to reduced insulin sensitivity or impaired glucose tolerance test. Drinking more than one soft drinks added risk for heart disease and diabetes. American heart association stated that drinking more than one soft drink added risk for metabolic syndrome. Such metabolic disorder causes multi-factorial risk factors such as increase waist hip ratio, high fasting glucose, dyslipidemia etc. Food additives added such as aspartame, MSG, quinoline yellow and brilliant blue when accumulates inside body causes diabetes due to destruction of cells physiology, pancreas beta cells and reduced cells insulin sensitivity.

India is agricultural country women is under continues exposure to herbicides, pesticides or insecticides directly or indirectly. Four herbicides such as 2,4,5-TP, 2,4,5-T atrazine or butylate and insecticides mainly carbofuran, phorate or diazinon are reported to cause gestational diabetes twice than who are not under exposure to this toxic compound. Monosodium glutamate (MSG) and aspartame added to sauce like tomato sauce or soup causes increased tendency towards endemic obesity. Further MSG leads to damage to hypothalamus causing endocrine disorder such as Thyroid, DM or increases cortisol level. Alloxanis used to make white flour more beautiful and clean in order to have good attraction for sale which destroys beta cells of pancreas. This Alloxan induces diabetes in single dose in Wistar rats. Alloxan may induce diabetes on year intake of it. Chronic metal toxicity by arsenic also induces diabetes and it is found higher prevalence more than five times in Bangladesh. Cadmium is heavy metal present in environment which accumulates in pancreas causes diabetogenic effect. Cadmium interfere with fasting glucose level, urinary cadmium levels are directly proportional in relation to diabetic and fasting glucose level. Mercury interferes with transulfuration pathways, it is essential for cellular proteins for their fundamentals functions all such heavy metals are consumed directly or indirectly accumulates inside the body and due to its cumulative effect it stimulates auto-immune reactions leading to diabetes mellitus. Poultry industries is growing day by day and adding arsenic compounds to feed of chicken as growth stimulant also chicken Manure is added in agricultural field further added the arsenic compound to soil. Person consuming 60 gram/person/day leads to inorganic consumption about 1.38-5.24 micrograms per day. These toxic substances release into environment and along of air, water, soil and can easily enters into food chain and then accumulate into human body. Usually highly water soluble compounds have low potential of bioaccumulation. They can easily remove unless the cells have

specific mechanism for retaining them but for this tendency also have exception of like heavy metals. Heavy metals like Arsenic has tendency of binding with specific site within the body. On the other hand lipophilic (Fat soluble) chemical pass into cells membranes more easily than water soluble chemicals. These chemicals stored for longer time within the body and show their toxic effect during remobilization. This phenomenon is also known as Bioaccumulation.

## Management

Shodhanachikitsa (Purification treatment) is important in management of these disorders. Whenever the *dushivisha* enters into *Rakta-dhatu*, then *Siravedha* (bloodletting therapy) along with other *Panchakrmas* (Detoxifying or bio-purification procedures) should be done. Proper *Pathyadikarma* (dilatory managements) should be followed after these detoxifying procedures. *Shaman chikitsa* (alleviating therapy) is advised when the *doshas* are not deep rooted. After *Shodhana*, *Shamana* is significant to subside the remaining *doshas*. When there is contraindication of *Shodhana* or patient is unable to undertake *Shodhana* then *Shamana* is very effective treatment for them. *Dushivishariagada* is the most important Ayurvedic herbo-mineral preparation indicated in *Dushivisha*. It contains *Pippali* (Piper longum), *Dhyamakam* (Cymbopogon martini), *Jatamansi* (Nordostachysjatamans I), *Lodhra* (Sympllocouracemosa), *Ela* (Elettariacardamomum), *Suvarchika* (Salt petre), *Kutannatum* (Oroxylumindicum), *Natam* (Valerianawallich), *Kushta* (Saussurealappa), *Yashtimadhu* (Glycerrhizaglabra), *Chandana* (Santalum album), *Gairika* (Red ochre). Also various types of medications that are given in Ayurvedic texts can be used for management of Diabetes and its complications.

## DISCUSSION

*Dushivisha* is cumulative poison which on getting toxic level inside the body due to the *Dushit Desha* (environment), *kala* (time), *anna* (food), etc. that leads to various sign and symptoms, in which many of the symptoms resembles with Diabetes and its complications. Heavy metals such as arsenic, lead, cadmium, mercury causes autoimmune reaction which leads to endocrine disorders. Alloxan destroys the beta cells of pancreas. MSG and aspartame increases cortisol level causes diabetes. Food preservative such as aspartame, MSG, quinoline yellow and brilliant blue causes reduction insulin sensitivity and destruction of cells physiology. Thus such toxic chemical added to food stuff causes cumulative effect leading to diabetes.

## Conclusion

Today in modern scenario, preservative and additives used for preservation of foods added cumulative toxicity and at higher level of it causes further more complications leading to diabetes. Thus *dushivisha* effect is equally applicable nowadays for present scenario toxicity.

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