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REVIEW OF *DUSHIVISHA* WITH SPECIAL REFERENCE TO FRUIT
RIPENERS (CALCIUM CARBIDE)

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REVIEW ARTICLE

REVIEW OF *DUSHIVISHA* WITH SPECIAL REFERENCE TO FRUIT RIPENERS
(CALCIUM CARBIDE)

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ABSTRACT:

In today's fast life, we have more chemicals in our daily lives as compared to older times. This excessive use of chemicals imposes many serious health hazards on human life. Fruit ripener in the form of calcium carbide is one such chemical which is used rampantly despite it being banned. It is done so that the fruit appears ripe, and the traders get higher price of the fruit. Calcium carbide is a dangerous and corrosive chemical compound. Human body cannot get rid of these toxins as most of these are fat soluble and limited excretory capacity of humans. This results in cumulative accumulation of these toxins in various body tissues. It is retained in the body tissues for years and thus posing serious health consequences. The accumulation of toxins in the body is analogous with the concept of *Dushivisha* elaborated in *Ayurveda*. In *Ayurveda*, *Dushivisha* is a form of toxin (animal origin, plant origin, artificial poison) that has not been completely eliminated or neutralized due to various reasons, remains in the body for some time and eventually gets manifested in the form of some toxic effects or disease. *Dushivisha* is mild in potency; so it does not impose immediate threat to the life but causes various toxic effects and diseases as toxin remains in the body for longer time; if untreated. The aim of this paper is establish the hazardous effects of calcium carbide w.s.r. to *Dushivisha* and utilize the principles of management of *Dushivisha* to preserve human health.

Key Words: *Dushi visha*, Calcium carbide, Cumulative, toxicity

INTRODUCTION

Ayurveda has eight major clinical disciplines namely *Rasayana*, *Vajikaran*, *Kayachikitsa*, *Shalyatantra*, *Shalakatantra*, *Bhutvidya*, *Agadtantra*, and *Kaumara-britya*.^[1] *Agadtantra* is the branch of *Ayurveda* which is meant for diagnosis and treatment of various poisoning cases of *Sthavara visha*, *Jangama visha* and *Kritrim visha*.^[2] According to *Sushrut samhita*, *Dushivisha* (cumulative poison); is a form of toxin (animal origin, plant origin, artificial poison) that has not been completely eliminated or neutralized due to various reasons, remains in the body for some time and eventually gets manifested in the form of some disease.^[3] *Dushivisha* is mild in potency; so is not lethal but causes various diseases as toxin remains in the body for longer time.

In modern era, thousands of harmful chemicals enter our body on a continuous basis due to daily exposure to chemicals in our very homes and environment. Calcium carbide is one of the chemicals that is used freely in recent times to hasten the ripening process and thereby increasing the shelf life of the fruits.^[4] It gains entry in the body after eating these contaminated fruits. This toxin which is less potent remains in dormant state within the body for year together without causing

any harm to the body. But, in due course of time, constant use of such contaminated fruits leads to cumulative toxicity. This cumulative toxicity slowly affects the vital energy and immunity of the human being and resulting in disease.

This cumulative toxicity is well explained in *Ayurved Samhitas* as *Dushivishaktata*. In this modern era, it needs to be explained, supplemented and narrated for proper understanding and treatment of cumulative toxicity. The concept of *Dushivisha* and its management can prove milestone in treating and neutralizing the hazardous effects of calcium carbide on human being.

AIM AND OBJECTIVE

This study intends

1. To establish the hazardous effects of calcium carbide w.s.r. to *Dushivisha* and
2. To utilize the principles of management of *Dushivisha* to preserve human health.
3. To educate the people regarding preventive measures of toxic effects of calcium carbide.

Literature Review -

Visha - As per *Sushrut Samhita* a substance producing despair is called as *Visha*.^[5] Perhaps the

most comprehensive definition of *Visha* is, any substance which enters the body from any route, vitiates bodily tissues, leads to destruction of health or life can be called as *Visha*.^[6]

Types of *Visha* – According to *Charak Samhita* and *Sushrut Samhita*, poisons are mainly classified into two types namely *Sthaavara Visha* (vegetable origin) and *Jangam Visha* (animal origin)^[7] whereas, Bhavaprakasha classified poisons mainly into two types 1. *kritrim visha* which is of two types viz *dushivisha* and *garavish* and 2. *akritrim visha* which is also of two types viz. *Sthaavara Visha* and *Jangam Visha*.^[8]

Definition of *Dushivisha* - The word *Dushi* is derived from the root word '*Dush*' which means 'impure or possessing the property to vitiate'.^[9] *Dushivisha* is a form of toxin (animal origin, plant origin, artificial poison) that has not been completely eliminated or neutralized due to various reasons, remains in the body for some time and eventually gets manifested in the form of some disease.^[10]

Sign and symptoms of *Dushivisha* - It produces prodromal symptoms like sleepiness, heaviness, yawning, and looseness of joints, horripilation and body ache. After prodromal phase, it produces diarrhoea, discolouration of skin, thirst, anorexia, fainting, vomiting, stammering speech, vertigo, pustules, *kitibha* and urticarial rashes.^[11]

Calcium carbide – Calcium carbide is a chemical compound with the chemical formula of CaC_2 . Pure calcium carbide is a colourless solid.^[12] The calcium carbide reacts with water and produces acetylene and calcium hydroxide. The acetylene is responsible for triggering the ripening process.^[13] Today, calcium carbide is one of the most commonly used ripening agent for fruits in the domestic markets. However, this is illegal because consumption of fruits artificially ripened using calcium carbide can cause serious health problems in those who eat them.

Calcium carbide toxicity – Calcium carbide is a dangerous and corrosive chemical compound. When it is consumed frequently in smaller doses over a long duration it causes various side effects on human health. Once dissolved in water, the carbide produces acetylene gas. Acetylene gas may affect the neurological system by inducing prolonged hypoxia. The findings are headache, dizziness, mood disturbances, sleepiness, mental confusion, memory loss, cerebral edema and seizures. It causes digestive, respiratory and gastrointestinal disturbances in the form of

headache anorexia, nausea, vomiting and diarrhoea. Repeated inhalation may cause severe irritation of the upper respiratory tract with pain and even chronic bronchitis. Repeated/prolonged skin contact may cause dryness or rashes.^[14]

Conceptual Review – The repeated consumption of fruits ripened with calcium carbide results in its accumulation in the body as complete excretion of the toxin is not possible. This accumulation of calcium carbide in the body tissues results in toxic effects like headache anorexia, nausea, vomiting, diarrhea, dryness or rashes on skin, dizziness, mood disturbances, sleepiness, mental confusion. These manifestations correlates with the symptoms illustrated in *Dushivisha* as per *Ayurved* texts. The toxic effects of calcium carbide can be treated with *Panchakarma* therapy as per *Dushivisha Chikitsa*, which can restores normal health through detoxification of the body.^[15]

DISCUSSION

Fruits are nutritionally indispensable food commodity as it plays a vital role in human nutrition by supplying the necessary growth regulating factors essential for maintaining normal health. The fruit and vegetables may require few days to ripen and this period seriously limits its commercialization in distant markets. So, the fruits are ripped by using different chemicals like calcium carbide as fruit ripening agents. It is easily available in the market and comparatively cheaper also. The quantity required for ripening of very raw fruit is more thus resulting in extensive toxic effects. Due to rampant use of such chemicals, humans are subjected to serious health hazards. State authorities under Rule 44 AA of the Prevention of Food Adulteration (PFA) Rules, 1955 prohibits use of such chemicals and if found guilty vendors will be punished with up to six months in jail and fine of Rs. 1000.^[16] But, its indiscriminate use still continues in the market posing health problems for human beings.

CONCLUSION

The fast ripening of very raw fruits by using chemicals like calcium carbide undoubtedly poses immediate threat to the health of the consumers. Washing the fruits before consuming them is helpful in getting rid of these contaminants. But, some quantity of calcium carbide remains there as a residue in the fruit which enters in the body through ingestion thus resulting in its cumulative toxicity. If the toxicity is considered to be *Dushivisha* as per *Ayurveda*, the principles of management of *Dushivishaktata* can prove very useful in restoring the health of the sufferers. Also, the community should be made aware about toxic

effects of fruit ripeners and some stringent action should be initiated by the health authorities against such mal practices.

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