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# "Toxicity Of Heavy Metals In Context With Ashuddha Bhasmas And Review Of Arsenic"

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#### ABSTRACT -

The well-known metal mostly used in *Ayurveda* include Hg, As, Ag, Cu, Pb, tin etc. These metals have specific gravity more than 5. Hence these are categories in group of heavy metals. *Bhasmas* are unique *Ayurvedic* metallic preparations with herbal juices and fruits widely used for treatment of variety of chronic aliment. The *Bhasmas* are products of classical alchemy oregano metallic compounds of certain metals and gems in a very fine powdered form mostly oxides made in elaborate incineration processes perfected several centuries ago. Hence importance of classical *Bhasmas Pareeksha* like *Rekhapurnatwa*, *Nishchandratwa* etc. is justified. Improper incineration gives *Ashuddha Bhasma* which contains toxicity and due to which complications arises. A comparative similar thing could be observed between heavy metals and *Ashuddha Bhasmas*. The arsenical compounds are intentionally added to the *Ayurvedic* formulation as main active ingredients or as axillary agent to assist the efficacy of herbal drugs. So review of arsenic discussed here.

Key words - Toxicity, heavy metal, Ashuddha Bhasma, Arsenic.

## **INTRODUCTION:-**

The Pharmacological Section of Ayurvedic system of medicine recognizes 3 major sources of medicine, those of herbalorigin mineral origin (eg. salts, metals like gold, copper, silver) and animal origin (eg. Milk, honey etc.). Although Kashthaushadhi and Rasaaushadi are two main groups of medicine the farmer is devoid of any metals and minerals and is purely herbal product can be consider of metals and minerals in the form of Bhasma (incinerated metals and minerals etc.) The well-known metal mostly use in Ayurveda include Hg, Au, Ag, Cu, As, lead, tin, etc. These metals have specific gravity more than 5 hence these are categorized in group of heavy metal Bhasmas are unique Ayurvedic metallic preparation with herbal juices widely used for treatments of diseases.<sup>1</sup>

The *Bhasmas* are products of classical alchemy organic – metallic compounds of certain metal and gems in a very fine powdered form mostly oxides, made in elaborate incineration processes perfected several centuries ago Now a day's some people who are unaware of the pharmaceutical processing *of Rasaushadis* are in doubt about their toxicity.

Recent articles pertaining the alarming level of heavy metals especially Pb, Hg &

As in *Ayurvedic* formulations have created a lots of controversy regarding the safety efficacy of Ayurvedic formulations. It same context ,lead, Hg & As have been detected in a substantial proportion of Indian manufactured traditional Ayurvedic medicines are unknown, hence an attempt was made to study comparative things or the facts of heavy metal poisoning &Ashuddha Bhasmas Sevan Doshas. Arsenic is a naturally occurring element that is widely distributed on earth crust. It is classified chemically as a metalloid having both properties of metal and nonmetal however it is frequently referred as metal. The arsenical compounds are intentionally added to the Ayurvedic formulations as main active ingredients or as auxiliary agents to assist the efficacy of herbal drugs. Many toxic metals are used in Ayurveda after Shodhana purification and Marana calcination. It is a process to convert Inorganic materials to organic compound for better absorption, assimilation, reduce toxicity and to enhance the medicinal properties

# Aim:

Conceptual study of Toxicity of metals in context with *Ashuddha Bhasama sevan dosha* and review of Arsenic.

## **Objectives:**

1) To review modern concept of Toxicity of metals.

2) To review Ashuddha Bhasama sevan dosha.

3) To review of Arsenic

#### Methodology:

## **Toxicity:**

The Branch of science which deals with the study of poisons in references to their source , character properties , mechanism of action, sign / symptoms, lethal dose , cause of death ,Rx , detection & estimation & postmortem findings. Toxicity is the degree to which substance can damage an organism. This can affect a whole organism or structure like cell (cytotoxicity) or an organ (Hepatotoxicity)<sup>2'3</sup>.

a) Classification based an Action<sup>4</sup>

- Corrosives
- Irritants
- Neurotoxic
- Cardiac
- Respiratory
- Miscellaneous.

## \* Table no. 1- Irritants toxicity

Non Metals	Metals						
Phosphorous	Arsenic , Lead ,						
Boron, Fluorine	Mercury, Copper,						
,Chlorine,	Ferrous , Zinc ,						
Bromine,	Magnesium ,						
Iodine	Manganese,						

## Heavy metals

These are essentially those chemical elements that have a specific gravity. Which is five times that of water. These are mast often found to be responsible for harmful damage to humans in cases leading to environmental pollution from various sources are Hg ,As, Pb, Cd, thallium. Heavy metal toxicity refers to the excessive buildup of heavy material in the body. Since body cannot degrade them, they gate accumulated in a body tissues and interfere in the healthy functioning of system and may results in disease like a neurological, degenerative processes, Parkinsonism disease muscular dystrophy, multiple sclerosis etc. Toxicity of metals are listed here according to WHO the metals of most immediate concern internationally are aluminum, chromium, manganese, iron, cobalt, copper, cadmium, mercury, lead, arsenic (WHO 1984). Out of these 106 identified elements, 80 of them are called metals. Metals are divided in two groups that are essential and nonessential. Essential are used for survival and non-essential are toxics.516

# Factors influencing toxicity

1) Path of administration (skin, inhaled, ingested, injected).

2) Time of exposure.

3) The no. of exposure (single dose or multiple doses).

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4) Th	e physical form	n of toyin	(Solid		Con	Connor	salivati	Green
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5) The	genetic maket	up of an in	dividual.			carbonates,	ng ,	gum ,
6) Ind	lividual's overa	all health a	and many			Copper	Burnin	Nausea,
others.			5			oxide	g pain	giddiness
others.							in	,headache, colicky
Based	on a time of a	in exposu	re it can				upper GIT	pain ,
be-							,thirst,	conjunctiv
A) Ac	ute exposure	– A sing	le exposure		-		nausea,	itis
to	a toxic substa	nce which	may result				diarrhe a	laryngitis, bronchitis
						-	hematu	biolicilitis
1n :	severe biologic	cal harm of	r death.				ria ,	nephrotox
B) Ch	ironic exposu	r <b>e</b> – Conti	nuous		7	11 12	albumi	icity,
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-					/		jaundic	dermatitis,
pei	riod of time;	often m	leasured in				e , muscul	anemia
ma	onths of years.						ar	(
Table	no. 2 – Metal	ls and it's	Acute and				cramp	
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							ions.	
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ury <sup>8</sup>	chloride	and	y edema,			minerals	,headac	s fine
ury	(Corrosive	feeling	pneumoni		- 1.5	calaverite,	he,	vibrating
	sublimate),	of	a, ataxia,		810	krennerite,	colicky	muscles
	Mercuric	constric	arthralgia,			nagyagite,	pain,	movement
	cyanide,	tion in	fibrosis,		1	petzite &	conjunc	s, bone
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	oxide (Ras	and	polyneuro			Bismuthide	dermati	depressio
	kap <mark>oor),</mark>	upper	pathy,	~	0	maldonite	tis,	n stomach
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	oxide	fatigue,	impairme			Amtimonid	,	intestinal
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	Sulphate,	g,				Novodnepri		
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sulphide- <i>a 13</i> chloride <i>Kushtha</i>		sulphide-			J	a 13	chloride	Kushtha	

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	1	1		-		I	I	
	(Corrosive	Girija-					a, Vrana,	
	sublimate)	Jadyata					Gatraruka	
	Mercurous	Jalaja-			Shilaj	Gomutrag	Daha,	
	oxide (Ras	Vataroga			atu	andhi –	murcha,	
	kapoor)	Nagaja-				Blackbitu	bhrma,	
	Mercuric	Unmade				men	rakta	
	oxide	Vangaja-				Karpurgan	pitta,	
	(Sipichand	Mahashul				dhi –	kshaya,	
		aroga				Potassium	agnimand	
	Mercuric	Tamra-				nitrate	ya &	
	cyanide,	Daha	1				vibhanda	
	Murcuric	Loha-				Copper	Vaman,	
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	sulphate,		10			1/-	U	
	Mercuric				D	Zinc oxide		
	sulphide				Rasa		Bhrama,	
	(China				ka	- ZnO	Vami	77 1
	•				Gand	Copper	Mandaga	Kushta,
477	sindur)	<b>R</b> 1.1	D '		haka	Pyrite,	ni, Ksudra	Jwara,
Abhr	Biotite -	Kushtha,	Poison,	P		Iron	kustha,	Bhrama
ak	Black	Ksaya	Vajra,			Pyrite,	Kasa	,
	mica,	Roga,	Sastra			Copper	(cough),	Pittaro
	Lepidolite	Pandurog	agni			Sulphate,	Swasa	ga,
	– Ruby	a, Sotha,	Prmeha			Ferrous	(Dyspnoe	Rupa,
	mica	Pain in	Roga,	-		Sulphate,	a),	Veerya
	Muscovite	cardiac	<b>Chand</b> r			Galena	Wild fire,	balanas
	– White	region &	ika			(Nilanjana	<b>Dadrur</b> og	ha,
	mica	flanks,	Yukta			),	<mark>a (S</mark> kin	tapa,
	(Potash)	loss of	Bhasma		-	Galena	<mark>disease</mark> ),	raktavik
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	-	Guru for	mrityu.			), Zinc	Dosha	
	Magnesiu	digestion.				Sulphate		
	m <mark>mica</mark>		1	~	0	(Yashada),		
	Paragonite					Antimony		
	– White		10			Sulphide		
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ika	te (Swarn)	Kustha	prakara	YY.	HEA	(Haratala),	IENCE	S
	- CuFeS <sub>2</sub>	roga,	kushta,	1		Realgar		- 201
	Iron Pyrite	Ksaya	Mrityu.			(Manasila)		
	(Rajata) -	roga,				•		
	FeS <sub>2</sub>	Krmi				Cinnabar -		
	_					Hingula		
		roga,				Imguia		
		roga, Mandagni				Tillgulu	Ayunashta	Vata
		•				Arsenic	Ayunashta , Mrityu,	Vata kapha

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T				٦		11 1	Γ	
ala	$As_2S_3$	roga,	<i>a</i> ,			maldonite		
		Vata	kushta,			(Au <sub>2</sub> Bi)		
		roga,	Тара,			Amtimoni		
		jwara,	Anga			de		
		Daha,	Sankoc			aurostibite		
		Sphota,	ha,			(AuSb <sub>2</sub> )		
		Snaayu	Sruja			Auricuprid		
		sankocha/				$e(Cu_3Au)$		
	10.5.401	Anga				Novodnep		
		sankocha,		~		rite		
		Kushta,	-			(AuPb <sub>3</sub> )	1 .	
		Rakta				Weishanit		
		dushti,		_		e ((Au,		
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		sundarta				)	Veeryanas	ha,
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	and a second sec	. 0				Agrentite	, Veerya	
	1000	Malaband				$(Ag_2S),$	nasha,	
		ha, Mutra		20		Polybasite	Nanaroga	
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		krichra	1.1.1			Cerargyrit	usada	
Hing	Sulphide	Ksheena,				e (AgCl),	<i>viserere</i>	
ula	of Hg red	Klama	1000		1	Proustite		
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na	Tellurium	veeryanas				Wrought	Shula,	ula,
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	minerals	Dukha,	Asouky	2,215		Magnetic	1151011011	a
	calaverite,	Giri	eya			inagnetie		tanuta,
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	sylvanite,							гија, Ауи
	Bismuthid	, Asoukyey						Ayu bala
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	C .	<i>a</i> , <i>marana</i>	l	1				kanta

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			nasha			Mushkaro				
						ga, Jadya,				
Naga	Galena(Pb	Kushta,	Kushta,			Mahadah				
	S)	Gulma,	Gulma			<i>a</i> ,				
	Lead	Aruchi ,	Atikasht			Veeryanas				
	Carbonate	Kshaya,	а,			ha,				
	PbCO <sub>3</sub>	Kapharog	Pandu,			Murcha.				
	Lead	a, Rakta	Prameh	Yash	Zinc	Prameha,	Prameh			
	sulphate	vikara,	а,	ada	sulphide	Ajeerna,	а,			
	PbSO <sub>4</sub>	Pandu,	Anilasa	~	(ZnS)	Vatavyad	Ajeerna			
	Lead	Mutrakric	da,		Zinc oxide	hi, Vami,	,			
	Chloride	hra,	shota,		(ZnO)	Bhrama	Vatavya			
	PbClF	Jwara,	Bhagan		Zinc		dhi,			
	Lead oxide	Shula,	dara.		carbonate		Vami,			
	PbO	Kam <mark>ala</mark> ,	100		$(ZnCO_3)$		Bhrama			
		Prameha,			Zinc	1.00				
		Kampa,		1 martine	silicate					
		Kilasa,		Vajra	Kushta,	Pandu,				
		visha,			Parshwa	Kushta,				
		Vatashop		-	shula,	kilasa,				
		a,			Pandu,	Daha,				
		Vrdradi,			Shareera	Guruta.				
		Mushka		100	bharipan,	Guruna.				
		roga,			Tapa,					
		Jadya,	-		Jadya,					
	1000	Mahadah			kilasa,	-				
		a,		1	Daha,					
		u, Veeryanas		1	Guruta					
		ha,		Tank	White	Vanti,	Vanti.			
		Murcha.			colour	Bhranti	vann.			
Vang	Cassiterite	Kushta,	Kushta,	ana	Blue	Brranii				
<i>a</i>	$(SnO_2)$	Gulma,	Gulma	1	colour					
a			Atikasht		coloui	-				
	Stannite, Cylindrite,	Pandu, Prameha,		Dariar	Of Angenie					
	Franckeite,	Vatarakht	a, Pandu,	Review	Review Of Arsenic:					
	Canfielidit		Prameh	Arseni	c Form-Ars	senic is a	naturally			
	e,	a, Balanash	a,	occurri	ng elemen	t that is	widely			
	Teallite	a, Kampa,	a, Anilasa		C					
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	1.01.11.77.11	shula, shota,			ally as a 1	netalloid ha	ving both			
	NULII	Baghanda	Bhagan	nuonout	properties of metal and nonmetal however					
		ra, Visha,	dara,	propert	les of metal	and nonmeta	I nowever			
		RaktaVika		it is fre	it is frequently reffered as metal. Arsenic is					
		ra,	Apache,	استمامه	one odorloss	tastalass on	irritatina			
		Kshaya,	Vaatrak	colouri	ess odoriess	tasteless on	innaung			
		Kaphajwa	ta,	gas t	hat cause	rapid and	unique			
		ra,	Balaha	C		-				
		Ashmari,	ni	destruc	tion.					
	1	Vidradi,			c compound	14				

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- 1) Arsenic Metallic arsenic As
- Arsenic acid- (4- aminophenyl)-C<sub>6</sub>H<sub>8</sub>AsNO<sub>3</sub>
- Arsenic Pentoxide- Arsenic oxide As<sub>2</sub>O<sub>5</sub>
- 4) Arsenic sulfide- Arsenic sulfide –
   As<sub>2</sub>S<sub>3</sub>
- Arsenic trichloride Arsenic chloride-AsCl<sub>3</sub>
- Aesenobetaine- Arsonium carbxy methy trimethyl hydroxide, inner salt, 2-trimethylarsonioacetate C<sub>5</sub>H<sub>11</sub>AsO<sub>2</sub>
- 7) Calcium arsenate- Arsenic acid  $(H_3AsO_4)$ -  $(AsO_4)_2.3Ca.$  Calcium salt(2:3)
- 8) Dimethylarsenic acid- Cacodylic acid
   C<sub>2</sub>H<sub>7</sub>AsO<sub>2</sub>
- 9) Lead arsenate- Arsenic acid (H<sub>3</sub>AsO<sub>4</sub>)Pb
- 10) Methanearsonic acid, disodium salt –
   Arsonic acid, methyldisodium salt
   CH<sub>3</sub>AsO<sub>3</sub> 2Na
- 11) Methanearsonic acid, monosodium salt
   Arsenic acid Methyl monosodium salt CH<sub>4</sub>AsO<sub>3</sub>Na
- 12) Potassium arsenate –Arsenic acid(H<sub>3</sub>AsO<sub>4</sub>)- Monopotassium Salt-AsO<sub>2</sub>K
- 13) Sodium arsenate- Arsenic acid (H<sub>3</sub>AsO<sub>4</sub>),Na monododium salt
- 14) Sodium arsenite –Arsenous acid , sodium salt AsO<sub>2</sub> Na

15) Sodium cacodylate – Arsinic acid – dimethyl- sodium salt –C<sub>2</sub>H<sub>6</sub>AsO<sub>2</sub>.Na

Fate of arsenic drug<sup>15</sup> - The primary routes of arsenic entry into the body are ingestion and inhalation dermal absorption also occur but to lesser extent. Arsenic undergoes biomethylation in the liver. Approximately 70% of As is excreted, mainly in urine. Most of single low level dose is excreted within a few days after ingestion.

Fate of Drug

 Gastrointestinal drugs tract-Trivalent Arsenic Compounds approximately 955 of ingested dose is absorbed form

2) Lungs

- 3) Dermal- mostly (Arsenic trioxide).
   Approximately within 60% to 90%.
   Fine particles are deposited more deeply in the respiratory tract
- 4) Skin- Generally negligible, either arsenic trichloride or arsenic acid was splashed on workers skin in occupational accident

Distribution-Absorption by lungs\gastrointestinal tract widely distributed by the blood thought out the body. Most tissues rapidly clear As except for skin hair and nails. 2-4 weeks after exposure ceases most of the arsenic remaining in the body is formed is Krratin

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rich tissues such as hair nails skin and bone teeth. Metabolism Arsenic absorbed into blood stream at cellular level.1) by red blood cell.2) white blood cell.3) and other cells that reduces arsenate to arsenite Reduction of arsenate to arsenite (As111) is needed before methylation can occur. This reaction requires glutathione (GHS). Arsenite methylated in the liver Methylation has been considered the main route of arsenic detoxification but moe recently thee has been a growing body of literature supporting other detoxification mechanisms. For example a no. of animal species lack arsenic. Methylation and excrete inorganic arsenic detoxification mechanisms such as 1) antioxidant defenses 2) resistence to apoptosis 3) Transport there have also been studies of arsenic metabolism suggesting that methylation of inorganic arsenic may be a toxification rather than a detoxification pathway and that trivalent methylated arsenic metabolites particularly mono methyarsonous acid (MMA111) and methyl arsious acid (DMA111) are unusually capable of irritating with cellular targets such as protein and DNA. Methylation efficiency in humans appears to decreases at high arsenic doses. Patterns of methylated arsenic species in urine are similar between siblings which suggests that arsenic and parents which suggests

that arsenic methylation is genetically linked. When the methylation capacity of the liver is exceeded exposure to excess levels of inorganic arsenic results in increased reduction of arsenic in soft tissues.

Excretion- Arsenic is excreted in the urine .Humans excrete a mix of inorganic, monomethylated and dimethylated forms of arsenic . The pentavalent metabolites MMA V and DMA V are less toxic than arsenite or arsenate. About 50% of excreted arsenic in human urine is dimethylated and 25% is monomentylated reminder being inorganic. According to urinary arsenic data from the National Health and Nutrition Examination Survey 2003-2004, as urinary levels of total arsenic increases and at lower urinary total arsenic levels, the predominant form is inorganic. Other less important routes of elimination of inorganic arsenic include feces, hair, nails, skin desquamation and sweat.

#### Poisoning of arsenic<sup>16</sup>-

1) Acute poisoning – a)signs and symptoms

. Faintness depression,

• Nausea, burning pain in upper GIT, salivation, thirst.

. Severe projectile vomiting – vomitus initially contains stomach contents later blood and finally it is watery colour of vomitus depends upon the colour of the salt.

. Pain and irritation of the anus.

. Diarrhea – foul smelling , initially contains faecal matter, later blood and finally is odourless, Colorless, ricewater stool of cholera.

. Oliguria, Albuminuria, hematuria and dysuria.

. Cramps of muscles, convulsion, dehydration, shock, coma, and finally death.

b) Inhalation of fumes- cough, frothy sputum, breathlessness, cyanosis, pulmonary odema, congetion of eyes and ulceration of cornea.

c) With large doses- Sudden death due to shock or mainly narcotic manifestations giddiness, pain in muscles, delirium, coma and death

2) Sub acute poisoning- Neuritis, paralysis and CVS disturbances, along with GIT manifestation. Also locked jaw, insanity, increased temperature, loss of speech and memory, hemolysis, haemoglobinuria, jaundice, hepatomegaly and aneamia.

- 3) Chronic poisoning-
- a) Stage of nutritional and gastrointestinal disturbancesweakness loss of weight, loss of appetite, abdominal pain, constipation, red appetite, abdominal pain,

constipation, red and soft gums and increased temperature.

- b) Stage of catarrhal changes- Increased secretion from larynx, bronchi, hoarseness of voice, congested eyes,
   photophobia, running nose, cough with expectoration.
- c) Stage of skin rashes- Brown, pin point pigmentation of the skin mainly covered parts known as Rain drop appearance' chronic ingestion causes vasodilation and the milk and roses complexion, nails become brittle and have linear pigmentation. Transverse white Mess lines appears on finger nails after about 15 days of exposure, indicating periods of arrested growth, Hair becomes dry pigmented and may fall of, anaemia, leukopaenia and thrombocytopenia are common.
- d) Stage of CNS disturbances-Headache, tingling and numbers, muscle pain, bone marrow depression and heart involvement.

**Fatal dose** – 180-200 mg . trivalent are more toxic.

**Fatal period-** In narcotic form – sudden death or death after 2-3 hrs. In gastrointestinal form 12-48 hours **Treatment-**

Use of emetics, gastric lavage with ferric oxide demulcent, Morphine for pain, I.V. fluids, Blood transfusion if required,

Intravenous hypo is useful , purgatives. BAL given 3 mg/kg as 10% solution in Archis oil with Benzyl benzoate, deep intra muscularly, 4 hourly for 2 days, 6 hourly on 3<sup>rd</sup> days and 12 hourly till 10<sup>th</sup> day.

Arsenic in view of Ayurvedic <sup>17</sup>-

Harital(Orpiment), Manashila(Realgar), and Gauripasan(White arsenic) are the commonly used Arsenical product in Ayurvedic medicine of India for wide range diseases after Shodhan maran. Gauripasan is now accepted in western medicine as first line chemotherapeutics agents against certain hematopoietic cancer. The arsenical compound are main active ingredients Ayurvedic in formulations or as auxiliary agents to assist the efficacy of herbal drugs. Many toxic metals are used in Ayurveda after Shodhana (purification) and *marana* (calcination). Shodhana is a method of triturating herbsand animal's product and heating of metals to metamorphosed into herbo mineral. It is a process to convert Inorganic materials to organic compound for better absorption, assimilation, reduce toxicity and to enhance the medicinal properties. Ayurveda well defined the toxic effect after ingestion of arsenicals without proper purification methods of Arsenical compounds.

Table no.4 – Toxic effect of andtherapeutic uses of Arsenicals ofAyurvedic

	Name of arsen ic prod uct	Che mic al for mul a	The rap euti c dos e	Toxicity	Therape utic uses
A LA	Harit aal (orpin ment)	As <sub>2</sub> S <sub>3</sub>	30- 60 mg	Serious skin manifesta tion, burning, wasting diseases, neurologi cal manifesta tion	Skin diseases 'irregula r fever, fistula in ano, piles and, sinus, nonheal ulcer, cough, cold, bronchiti
		~	-	5	s aphrodia siac, syphilis, cancer
	Mana shila (Real gar)	As <sub>3</sub> S <sub>4</sub>	15- 30 mg	Asmari(st one),Dys uria,Ano xia and skin manifesta tion	Skin diseases, anorexia, wasting diseases like cancer and tubercul osis,
	Gauri pasan	As <sub>2</sub> O <sub>3</sub>	1-4 mg	Burning , skin	osis, chronic fever, vitiligo, infection diseases Syphilis, Elephant

				_					
a(Whi		manifesta i	asis,			dosa	Parnakhandeshwar		
te		tion,	anemia,			ge	arasa,		
Arsen		Death	osoriasis			or 2	manashiladighruta,		
ic)						ratti	mrityusanjivanirasa		
/			asthama,			for	, Mrutyuutthapan,		
			osteoarth			7da	shwaskutharrasa,et		
			itis,			ys	С.		
			Spleeno			with			
			negaly,			mad			
	1.1		mpoten	1		hu,			
			cy,	-		sito			
	16		Cancer			pala			
Tabla	no 5-1	Formulation and an		]		di			
		compounds	uuuuu			chur			
Nam	Anti	Ayurveda	Nam	1	110	na			
	dote	formulation		~	7	or	C		
	dote	Tormulation				any			
arse nical	100		arse nical	116		anu			
						pan			
S II muit	Cl		s Harit		_	a.			
Harit	Shar	Kasturibhairav,			Gaur	Milk	Ardhawbheharyog,	Gaur	
aal	kara	krumikashtha	aal		ipasa	with	Kalanalrasa,	ipasa	
(orpi	+	naalarasa,	(orpi		na(	mad	Tandawriloha,	na(	
nmen	jeer	gulmakarasa,	nmen		white	maa hu		white	
t)	a	Chandkeshwararas				for 3	Nityaditras, Mallavati,		
	chur	a, Talakabhasma			arsen			arsen	
As <sub>2</sub> S	na	Talkeshwarasa,	As <sub>2</sub> S	1	ic)	days	Mallasindoor,	ic)	
3	or	Talasindoor,	3		1.0		vadvanalras,	1.0	
	Kus	Nityanandanarasa,			As <sub>2</sub> O		Sannipatbhairavras	As <sub>2</sub> O	
	hma	Manthanbhairavra.	5		3		, Campagna ann aonaca	3	
	nda	a,			1		Sameerpannagrasa, Suchikabharanrasa		
	swa	Raktapittankarsara			1				
	rsa	s <mark>a, Rasendragu</mark> tika,					etc		
	for	Vataganjakushakra		-	Ohara				
	3da	sa,	-		Obser	vation			
	ys	Vidyadhararasa,		-		Tritura	ation of curd lea	ds to	
		Sannipathabhairav	r	1.10	format	ion of	ahaa hut it daam't ma	on that	
		asa,			Tormat	1011 01	ghee but it doesn't me	an mai	
		Sameerpannagaras a etc	TION	AL	curd	is gh	ee. Similarly bhas	nas are	
Man	Sha		Man	PML-	nrenar	ed form	n of heavy metals but the	hev are	
Man	Sha	Kalagneebhairavra		VS	$H \in A$	Th	I SCIENCES		
ashil	dgu	sa,kalanalrasa,Kul		not heavy metals. Proper Sanskar process					
a (Deel	na halii	adhurasa,	a ( <b>D</b> col	like Shodhan Marana Amritikarana giyos					
(Real	balij	Krumikashtharasa,	(Real	like Shodhan, Marana, Amritikarana gives					
gar)	arit	Krumivinashanaras	0 /	us Shuddha bhasma. After purifications					
٥ - ٢	a nasa	a, Krumiharrasa		the metals and minerals are subjected to					
As <sub>3</sub> S	rasa	Kshayakesarirasa,	As <sub>3</sub> S			lais di	iu minerais are subje		
4	sind	Gadamurarirasa, Trilulosachintaman	4		separat	ted cyc	le of incineration follo	wed by	
	oora in	Trilukyachintaman			triturot	ing wit	h same herbal juice. T	hue the	
	in	rasa,		J	unural	ing wit	in same nervai juice. I	nus ule	

form of product is herbo metallic incinerated form (*bhasma*) with new physical chemical properties. But improper incineration gives us *ashuddhabhasma*, which act like toxic in nature as heavy metals. Heavy metals and *ashudha/apakwa bhasma* has same toxicity exposure. According to Heavy metals, the primary methods of metabolizing arsenic in human is methylation. The main route of excretion of arsenic is the urine.

#### **Conclusion-**

Heavy metals explained as "Metals has with specific gravity greater than 5". Which mean when they are put on to the water they will settle at the bottom. But going by the test for Bhasmas for final approval to use on human cases must have a quality Varitaratwa. Unnami. Rekhapurnatwa, Niruttha etc Bhasma parikshas. That means it indicate that, in the process of repeated incineration the previous metal got completely destroyed that's why ancient achary named this process as marana (Killing of a metals). Thus *bhasmas* are not heavy metels, they are nano particles with a mixture of an organic and inorganic compounds. But if repeated incineration process will not gate done on metals, then proper Bhasma preparation will not get. These bhasma behave like ashudha and apakwa bhasma. So ashudha bhasma gives toxic effects. As

Ayurveda explained ashudha bhasma sevan toxic effects which are similar to heavy metal toxicity. This prospective analysis of Arsenicals used in ayurveda medicine has given some light regarding the modern understanding of bioavailability, metabolism, toxicity, biological responses and pharmacological response with background of Ayurveda literature.

## References

www.ijpba.info, IJPBA Jan-Feb,
 2013/vol-4 issue,1

2. S. K. Singhal, Singhal's Toxicology at a Glance, published by The National book depot, Mumbai, edition 2013

ISBN:978-93-8020 -18-9 chapter no. 1, page no.2

3. http://www.merium websider. Com/dictionary/toxicity.

4. S. K. Singhal, Singhal's Toxicology at a Glance, published by The National book depot, Mumbai, edition 2013

ISBN:978-93-8020 -18-9 chapter no. 3,

page no. 4

5.http://www.ncbi.nlm.nih.gov.

6 John. H. Duffus., Heavy Metals-A meaning term (IUPACTechnical Reports) Pure & Applied Chemistry 2002, Vol-74,pp.793-807 doi-10.1341/pav20027400793. 7. Journal of Heavy Metal Toxicity & Disease

8. S. K. Singhal, Singhal's Toxicology at a
Glance, published by The National book
depot, Mumbai, edition 2013 ISBN:97893-8020 -18-9, page no.72

9.S. K. Singhal, Singhal's Toxicology at a Glance, published by The National book depot, Mumbai, edition 2013 ISBN:978-93-8020 -18-9 page no.74

10. S. K. Singhal, Singhal's Toxicology at
a Glance, published by The National book
depot, Mumbai, edition 2013 ISBN:97893-8020 -18-9 page no.70

11. S. K. Singhal, Singhal's Toxicology at a Glance, published by The National book depot, Mumbai, edition 2013 ISBN:978-93-8020 -18-9, page no.

12. Deva Raj Radhakant Shabdakalpadruma2002, Naga publication ,Delhi, pp 491.

13.Dr.SiddhinandanMishra,AyurvedeeyaRasashastra,Chaukhambhaorientalia ,Varanasi -221001.Chapter no.3

14. <u>https://www.ncbi.nlm.nih.gov\_arsenic</u> compounds .

15. <u>https://www.atsdr.cdc.gov</u>, biologic fate of arsenic in the body.

OURNAL OF

16.S. K. Singhal, Singhal's Toxicology at a Glance, published by The National book depot, Mumbai, edition 2013 ISBN:978-93-8020 -18-9, page no.65 to 68. 17. Ashok kumar panda et al/ijrap 3(6) nov –dec 2012, Arsenical compounds in Ayurveda medicine: A prospective analysiswww. Ijrap.net.