

# Punica Granatum Vrs COVID-19

Subjects: Pathology

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Punica granatum is historically known worldwide as a versatile medicinal fruit. 2 major varieties are presented (i) indo Ayurvedic type (Punica Ayurvedica ? ) that is small, harsh and yields no juice and (ii) the juice variety which is commercialised. Indo-Iranian joint effort presents a tome of textual data pertaining to the medicinal aspects of Punica. Ayurvedic texts and Occidental research modelled papers in tabulated form chronologically succinctly bringing out the evidence based historiography & medico-cultural heritage. On such platform a range of formulations; fruit-to-finished product are presented for the 1st time machine makeable and very specifically also by hand, at home. Poly pathology spectrum; versatile therapeutic range; medico-legal; lyophilisation; sterilisation; etc. aspects are also indicated. Includes Tablets; Suspensions for General to Geriatric case types. Ground breaking. Frank.

Keywords: Punica Granatum Formulation For Covid.

## 1. Introduction

SARS CoV-2 sub-spp., unusually stable virus, causes the efficient contagion Covid-19. Within 120 days it has become pan global pandemic. Either aspects are unheard off with never before like patho-physiology and grave prognosis (fatal outcome). A member of any family getting infected if left untreated demises within 15days. If not effectively quarantined it then leads to all member demise however well off & large be that joint family (supporting info). This has wrought dread & havoc. All out combat with every wherewithal is the way out. There are no alternatives. Historically, in all cultures and civilisation based schools of medicine the *Punica Grantum Linn.*, has been considered as panacea for many a human pathologies <sup>[1]</sup>. India is the largest producer <sup>[2]</sup>. The Govt of India in all its cumulative wisdom has hence set up 'The National Research Centre on Pomegranate', NRCP-ICAR, 2005 <sup>[3]</sup>; apart HRC-ICAR <sup>[4]</sup>. Additionally, pan globally there are tomes of individual & institution driven works ranging the five decades before present which all are herein relied upon. From every perspective Indo & European literature have been explored well and covers agro-met; cultivars; atypical; etc., perspective (collateral domain). In this communication we present the indo Ayurvedic punica; and also fleetingly examine Persian literature for topical levity for either have attracted (relatively) less of research focus from caption context. We choose the generic term 'punica' for it encompasses almost all the species & sub-species of the cultivars, pan global and also address our caption. Interestingly, the Indian civilisation has been in continuum (sans any break) in its present geo-location for at least 5000yrs before present and the 'extraordinary' Ayurvedic punica (our apportioned epitaph) as a textual medicinal member for at least 2500yrs before present. Therefore, we present (as different from 'discuss') the genus Punica as known drug source of choice vis-a-vis COVID-19; the fruit and its parts in various combinations towards formulation and fixed doses (supplements/ prophylactics/ therapeutics including psycho-somatic pseudo supports; etc., any school of health care) so that the stake holders may straight choose pick. Isolation; purifications & fractions whatever & however done being covered alike. All stake holders (punica-&-covid) may find this work as of seminal relevance. Meanwhile, covid caused mortality remains rampant in continuum unabated 24 x 7. Our teachers had taught us to 'fight to finish and do a good job'. Gandhian dictum of hand makeable; home makeable is our hidden agenda.

## 2. Historiography

Table 1 highlights the prior-art aspects vis-a-vis human maladies, as anti-viricide; anti-malaria; others and as a versatile member in numerous drug discovery matters <sup>[5]</sup>. Few of members of Table-I have also been cited as references.

**Table 1.** Indicative Histeriography of Punica in Academic Domain. Caption Context.

SI No	Year	Conveniently extrited Relevant References. Select. 4 Decades	Remarks	Country
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1	1982	Screening of Iranian plant for antimicrobial activity. <i>Acta Pharmaceutica Suecia</i> 19, 303-308	Anti-microbial	Iran
2	1988	A study of some properties of pomegranate ( <i>Punica granatum</i> ) from different localities –FAO, UN. Harana i ishrana, ISSN : 0018-6872.	Properties	Yugoslavia,
3	1995	Antiviral activity of tannin from the pericarp of <i>Punicagranatum</i> L. against genital Herpes simplex virus <i>in vitro</i> . <i>Chung Kuo Chung YaoTsa Chin</i> 20, 556-558	Anti Virus	China
4	1997	Polyphenols of pomegranate peels show marked anti-tumor and anti-viral action. <i>Chemistry of Natural Compounds</i> vol.33, pp.98-99	Anti Tumor	Uzbekistan
6	1997	Tannins from the leaf of <i>Punica Granatum</i> , <i>Phytochemistry</i> , Vol-48, pp.819.	Property	India
4	1998	Pomegranate: a role in health promotion and AIDS? In: Watson RR, <i>Nutrition, Foods and AIDS</i> , eds. CRC Press, Boca Raton, Florida, USA, pp 179-192	AIDS	USA
7	1998	Antiviral or antifungal composition comprising an extract of pomegranate rind or other plants and method of use. US Patent . 5,840,308	Anti-virus & Anti-fungal	USA
8	1990	<i>Compendium of Indian Medicinal Plants</i> : Central Drug Research Laboratory, CSIR, Lko, [1999 – 95], Vol – 1, 1990, p. 335, Vol – 2 , 1993, p.573, Vol – IV, p. 611, Vol –5, p. 709. (preceded by Glossary AND earlier by RRL Bhubaneswar publication – 3 Vols)	Properties	India
9	2000	news.bbc.co.uk/2/hi/south_asia/988316.stm Tuesday, 24 October, 2000, 12:16 GMT 13:16 UK. India claims herbal malaria cure	Anti-Malaria	BBC (India)
10	2000	Why a pomegranate ? British Medical Journal 2000; 321 doi: <a href="https://doi.org/10.1136/bmj.321.7269.1153">https://doi.org/10.1136/bmj.321.7269.1153</a>	Tonic	London
11	2001	Immunomodulatory activity of <i>Punica granatum</i> in rabbits--a preliminary study. <i>Journal of Ethnopharmacol</i> 2001, 78:85-87.	Immunity	USA - NRI
12	2003	A mixed Herbo-Chem-Anti-Malarial: Indicates cure & prophylaxis against Pf & Pv; >500 cases in 5 yrs; empirical basis of holistic approach. <i>AJTMH</i> , 69, 484.	Anti-Malaria	India
13	2004	<i>Punica GrGranatum's</i> Dermis indicates Prophylaxis against Malaria & wide spectrum anti-viral property in Human use. <i>American Journal of Tropical Medicine &amp; Hygiene</i> , Oct. 2004, Abstract No.968, 171(4), 288.m <a href="http://www.ajtmh.org/content/71/4_suppl/225.full.pdf+html">http://www.ajtmh.org/content/71/4_suppl/225.full.pdf+html</a>	-Do-	India
14	2004	<i>Punica granatum</i> (Pomegranate) juice provides an HIV-1 entry inhibitor and candidate topical microbicide. <i>BMC Infect Dis</i> , 4, 41. <a href="https://doi.org/10.1186/1471-2334-4-41">https://doi.org/10.1186/1471-2334-4-41</a>	HIV	USA - NRI
15	2005	<i>Punicagranatum</i> (Pomegranate) juice provides an HIV-1 entry inhibitor and candidate topical microbicide. In: <i>Annals of the New York Academy of Sciences</i> (New York academy of sciences) pp. 311-27.	-Do-	USA
16	2005	Rapid large scale purification of ellagitannins from pomegranate husk, a by-product of the commercial juice industry. <i>Separation and Purification Technology</i> , 41, 49–55.	Purification	USA

17	2005	National Research Centre On Pomegranate, Indian Council Of Agricultural Research, Soalapur, India. ESTABLISHED By Govt Of India.	PIN-413 255,	Exclusive Research Institute	Public Institution
18	2006	Pomegranate juice ellagitannin metabolites are present in human plasma and some persist in urine for up to 48 hours. <i>The Journal of Nutrition</i> , 136, 2481–2485.		In-Blood Life	USA
19	2006	Pomegranates: Ancient Roots to Modern Medicine. CRC Press Taylor and Francis Group, FL. 244p		Historiography	USA
20	2007	Antioxidant, antimalarial and antimicrobial activities of tannin-rich fractions, ellagitannins and phenolic acids from <i>Punica granatum</i> L. <i>Planta Medica</i> , 73, 461–467. USA		Anti-oxidant	Do NRI
21	2008.	Anthocyanins characterization of 15 Iranian pomegranate ( <i>Punica granatum</i> L.) varieties and their variation after cold storage and pasteurization. <i>Eur Food Res Technol</i> 227, 881–887. <a href="https://doi.org/10.1007/s00217-007-0799-1">https://doi.org/10.1007/s00217-007-0799-1</a> .		Storing	Iran
22	2008	Therapeutic applications of pomegranate ( <i>Punica granatum</i> L.): A Review. <i>Altern Med Rev</i> 2008, 13:128-144.		Therapeutic Properties	USA
24	2009	<i>Journal of Ethnopharmacology</i> , Vol. 125, No. 2, 2009, pp. 279-285.		Anti-Malaria	Italy
25	2010	Elagitannins of the fruit rind of pomegranate ( <i>Punica granatum</i> ) antagonize <i>in vitro</i> the host inflammatory response mechanisms involved in the onset of malaria, <i>Malaria Journal</i> , 9:208		-Do-	Do
26	2010	Pomegranate phytochemicals: Nutraceutical and Therapeutic values. In: <i>Fruit, Vegetable, Cereal science and Biotechnology</i> 4 (special issue 2), Global Science Books (publ.),pp. 56. <a href="http://www.globalsciencebooks.info/Online/GSBOnline/images/2010/FVCSB_4(SI2)/FVCSB_4(SI2)56-76o.pdf">http://www.globalsciencebooks.info/Online/GSBOnline/images/2010/FVCSB_4(SI2)/FVCSB_4(SI2)56-76o.pdf</a>		Nutraceuticals	Japan
27	2010	Pomegranate Breeding. In: <i>Fruit, Vegetable, Cereal science and Biotechnology</i> 4 (Spl issue 2), Global Science Books (publ.),pp26- <a href="http://www.globalsciencebooks.info/Online/GSBOnline/images/2010/FVCSB_4(SI2)/FVCSB_4(SI2)26-34o.pdf">http://www.globalsciencebooks.info/Online/GSBOnline/images/2010/FVCSB_4(SI2)/FVCSB_4(SI2)26-34o.pdf</a>		Breeding	Do
28	2010	Global Scenario of Pomegranate ( <i>Punicagranatum</i> L) Culture with Special Reference to India. In: <i>Fruit, Vegetable, Cereal science and Biotechnology</i> , 4 (special issue 2), Global Science Books (publ.), pp 07-18. <a href="http://www.globalsciencebooks.info/Online/GSBOnline/images/2010/FVCSB_4(SI2)/FVCSB_4(SI2)7-18o.pdf">http://www.globalsciencebooks.info/Online/GSBOnline/images/2010/FVCSB_4(SI2)/FVCSB_4(SI2)7-18o.pdf</a> <a href="http://www.globalsciencebooks.info/Journals/images/FVCSBDescripStyle.pdf">http://www.globalsciencebooks.info/Journals/images/FVCSBDescripStyle.pdf</a>		Agril-Review	Do
29	2010	Origin, History and Domestication of Pomegranate. In: Chandra R (Ed) Pomegranate. <i>Fruit, Vegetable and Cereal Science and Biotechnology</i> 4 (Special Issue 2), pp. 1-6. NRCP, <a href="http://nrcpomegranate.org/">http://nrcpomegranate.org/</a>		Historio-graphy	India
30	2011	"Fight Malaria at Home: Therapeutic & Prophylaxis Clinical Data," <i>Asian Pacific Journal of Tropical Disease</i> , Vol. 1, No. 2, , pp. 142-149.		Anti-Malaria	India
31	2012	Advances In Infectious Diseases, Vol. 2, pp.13-18. doi:10.4236/aid.2012.21003.		Anti-Inflammation	India
32	2012	<i>International Journal of Clinical Medicine</i> , 2012;3(1):1-8. Doi:10.4236/ijcm. 2012.31001.		-Do-	Gabon

33	2014	Fruit rots of pomegranate (cv. Wonderful) in Greece, Australasian Plant Pathology 43(5):583-588. DOI: <a href="https://doi.org/10.1007/s13313-014-0300-0">10.1007/s13313-014-0300-0</a>	Fruit Pathology	Greece
34	2014	The effect of technological treatments of the pasteurized juice processing on the antioxidant compounds content and the antioxidant activity of pomegranate (Punicagranatum L.) fruits juice. <i>Middle East Journal of Applied Sciences</i> 4(2), 232–http://www.curreweb.com/mejas/mejas/2014/232-242.pdf	Pasteur	India
35	2104	Anti-obesity effects of Taif and Egyptian pomegranates: molecular study. <i>Biochemistry &amp; Molecular Biology</i> , <a href="https://doi.org/10.1080/09168451.2014.982505">https://doi.org/10.1080/09168451.2014.982505</a>	Anti-Obesity	Saudi & Egypt
<b>References</b>				
36	2015	Evaluation of Egyptian pomegranate cultivars for antioxidant activity, phenolic and flavonoid contents, 2015. <i>Egyptian Pharmaceutical Journal</i> , Volume 15, Issue 3, Page: 143-149	Anti-Oxidant	Egypt
1.		Why a pomegranate ? British Medical Journal 2000; 321 doi: <a href="https://doi.org/10.1136/bmj.321.7269.1153">https://doi.org/10.1136/bmj.321.7269.1153</a>		
2.		Personal Communication of Dr. J Sharma, Director, NRCP-ICAR		
37	2016	Biochemical diversity in wild and cultivated pomegranate ( <i>Punica granatum</i> L.) in Pakistan, The Journal of Horticultural Science and Biotechnology, 92:2, 199-205, DOI: <a href="https://doi.org/10.1080/14620316.2016.1252250">10.1080/14620316.2016.1252250</a>	Biodiversity	Pakistan
3.		<a href="http://nrcpomgranate.icar.gov.in/">http://nrcpomgranate.icar.gov.in/</a>		
4.		<a href="https://www.ncbi.nlm.nih.gov/pubmed/27111111">https://www.ncbi.nlm.nih.gov/pubmed/27111111</a>		
38	2016	Effect of supplementation with pomegranate juice on plasma C-reactive protein concentrations : A systematic review & meta-analysis of randomized controlled trials. <i>Phytomedicine</i> 15;23(11):1095-102. doi: 10.1016/j.phymed.2015.12.008. Epub 2015 Dec 30.	C Reactive Protein	Romania & Australia
5.		Bhattacharya, et al. 11-5-2020 COVID-19: Indian Medicine Sources Drug Discovery Possibilities, Scholarly Community Encyclopedia, MDPI, <a href="https://encyclopedia.pub/1268">https://encyclopedia.pub/1268</a>		
6.		Bhattacharya Deepak, 2014 Select palm leaf manuscripts of Health Care Sciences, Indian Journal of History of Science, Indian National Science Academy, Vol. 49.3, pp. 294-97.	Red Gross Service	India
39	2017	<a href="https://doi.org/10.1177/0974492617718100">https://doi.org/10.1177/0974492617718100</a>		
7.		Director, <a href="https://nrcpomgranate.icar.gov.in/Contact">https://nrcpomgranate.icar.gov.in/Contact</a> .		
40	2017	Pomegranate ( <i>Punica Granatum</i> L.) Peel Hydroalcoholic Extract Supplementation Reduces Pain and Improves Clinical Outcomes in Patients with Osteoarthritis: A Randomized, Double-blind, Placebo-controlled Study. <i>Indian Journal of Physiotherapy and Occupational Therapy</i> , 53(4):385-391, 2017. doi: <a href="https://doi.org/10.1177/0974492617718100">https://doi.org/10.1177/0974492617718100</a>	Analgesic & Anti-Arthritis	India
9.		Vajpayee, Atal Bihari, 2001, India Greatly Values Its Relationship With Iran, Teheran Times, 10-4-2001, pp-Politics.		
41	2017	Pomegranate diagenins stimulate the growth of Akkermansia muciniphila in vivo. <i>Anaerobe.</i> , Feb;43:58-69. <a href="https://www.tenormtimes.com/news/61466/india-greatly-values-its-relationship-with-iran-vajpayee/">https://www.tenormtimes.com/news/61466/india-greatly-values-its-relationship-with-iran-vajpayee/</a> & (preceded by J L Nehru Memorial Museum Library) <a href="https://www.nationalheraldindia.com/international/iran-draws-inspiration-from-jawahar-memorial-museum-as-us-sanctions-loom-over-ties-with-india-(both-pm-synching)">https://www.nationalheraldindia.com/international/iran-draws-inspiration-from-jawahar-memorial-museum-as-us-sanctions-loom-over-ties-with-india-(both-pm-synching)</a>	Gut Flora	USA
42	2017	Arabia (KSA), 2017. <i>Bioscience Research</i> , 14(4):887-894		Saudi Arabia
10.		Bhattacharya, Deepak & Unnati Bhattacharya, 2018. Anti Tumor Orient Experiment – ATOX, Indian Journal of Natural Sciences, Vol.8 / Issue 48, pp. 13996-14002		
43	2017	Effect of extraction method and thermal processing on retention of bioactive compounds of pomegranate ( <i>Punica granatum</i> ) (cv. Bhagya) juice. <i>Indian Journal of Agricultural Sciences</i> , 87 (11), 1445–52, <a href="https://www.academia.edu/31709894/M_R_C.pdf">https://www.academia.edu/31709894/M_R_C.pdf</a>	Extraction Method	India
11.		<a href="https://www.researchgate.net/publication/321050781">https://www.researchgate.net/publication/321050781</a> AND <a href="https://www.researchgate.net/publication/314229235_METASTASIS_REVERSAL_CENTRE">https://www.researchgate.net/publication/314229235_METASTASIS_REVERSAL_CENTRE</a>		
12.		Behera Jagdish & Deepak Bhattacharya, 4/2020: AVIR – Anti Virus India Research COVID-19: Drug Discovery, Safe Sources, Indian Jor Of Natural Sciences, vol.107 issue 59 / pp.18923 – 18929.	Character	India
44	2018	Physico-chemical characteristics of pomegranate accessions from the Kurdistan region, Iran. <i>Physiology and Biology Of Medicinal Plants</i> . doi 10.2298/JAS1804355M		
13.		Behera Jagdish & Deepak Bhattacharya, 4/2020. Covid-19 Glossary, NIH-Figshare	Blood Vessel Protection	Germany
45	2018	Vasculoprotective Effects of Pomegranate ( <i>Punica granatum</i> L.) <i>Frontiers in Pharmacology</i> , REVIEW ARTICLE, <a href="https://doi.org/10.3389/fphar.2018.00544">https://doi.org/10.3389/fphar.2018.00544</a>		
14.		Peatey, C. L., D. Leroy, D. L. Gardiner and K. R Tren-holme, 2012. “Anti-Malarial Drugs: How Effective Are They Against Plasmodium falciparum Gametocytes?” <i>Malaria Journal</i> , Vol. 11, p. 34. doi:10.1186/1475-2875-11-34 DOI: <a href="https://doi.org/10.13140/RG.2.2.32554.67527">10.13140/RG.2.2.32554.67527</a>	Properties	Japan
15.		Soh P N, et al. 2009. In Vitro And In Vivo Properties Of Ellagic Acid In Malaria Treatment, Antimicrob Agents Chemotherapy, 2009;53(3):1100-1106. doi:10.1128/AAC.01175-08		
47	2018	Phytochemicals and Anti-HIV Activity of Ellagannins from ailer tree fruits, <i>Biopolymers and Cell</i> 34(3):218-228. DOI: 10.7124/bc.00097C	Anti-HIV	Ukraine
16.		Dell' Agli M, et.al., 2010. Ellagitannins of the fruit rind of pomegranate ( <i>Punica granatum</i> ) antagonize in vitro the host inflammatory response mechanisms involved in the onset of malaria. <i>Malaria Journal</i> , 2010;9:208. doi:10.1186/1475-2875-9-208.		
17.		Lekana-Douki, Deepak Bhattacharya, et.al., International Journal of Clinical Medicine, 2012;3(1):1-8. Doi:10.4236/ijcm.2012.31001.		
18.		Prato M, Giribaldi G. Matrix Metalloproteinase-9 and Hemozoin: Wedding Rings for Human Host and Pf Parasite in Complicated Malaria. <i>Journal of Tropical Medicine</i> . 2011;1-11. (special ref., p.6). doi:10.1155/2011/628438.		
19.		Bhattacharya Deepak (2012) Relevance Of Economic Field Microscope In Remote Rural Regions For Concurrent Observation Of Malaria & Inflammation, <i>Advances In Infectious Diseases</i> , Vol. 2, pp.13-18. doi:10.4236/aid.2012.21003.		
20.		Deepak Bhattacharya, “Fight Malaria at Home: Therapeutic & Prophylaxis Clinical Data,” <i>Asian Pacific Journal of Tropical Disease</i> , Vol. 1, No. 2, 2011, pp. 142-149.		
21.		Deepak Bhattacharya, 2017. Fight Malaria at Home: Ghare Maro Malaria Social Service to Drug Discovery – Bottom Up Model: A Review, <i>Air Water Borne Diseases</i> , 2017, Vol.6:1 DOI: 10.4172/2167-7719.1000135		

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http://www.ajtmh.org/content/71/4\_suppl/225.full.pdf+html.
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https://figshare.com/account/home#/Login : oddisilab1@dataone.in & Password : KedarGouri123\* ).  
2019. DOI: 10.17600/ActaHortic.2019.1254.8. Horticulture China
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https://doi.org/10.17600/ActaHortic.2019.1254.8.
25. Patil, P.G., Jamma, S.M., Singh, N.V. et al. 2020. Assessment of genetic diversity and population structure in Pomegranate (*Punica granatum* L.) using hypervariable SSR markers. *Physiol Mol Biol Plants*. Character Israel  
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No 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6925405/>
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30. Bhattacharya, Deepak. 2010. *Journal of Tech Tablet : A Concept. Novel Approaches in Drug Designing & Development*, Vol. 2(2) : 555-582. Anti-Covid India  
Please Login with this : oddisilab1@dataone.in Password : KedarGouri123\*
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www : Our search indicates an interesting histology about the scholarly efforts using the Punica fruit & its dermis.
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Reuters News Media Inc., 1996. Pomegranates could help in battle against AIDS. March 10<sup>th</sup>, <http://www.aegis.com/news/re/1996/RE960310.html> NOT AVAILABLE  
[https://www.academia.edu/31560111/Effect\\_of\\_Plant\\_Extract\\_R\\_Sol\\_on\\_Blood\(ii\)](https://www.academia.edu/31560111/Effect_of_Plant_Extract_R_Sol_on_Blood(ii))  
[https://www.researchgate.net/publication/313839561\\_R\\_-\\_Sol\\_Magic\\_Effect\\_on\\_Blood](https://www.researchgate.net/publication/313839561_R_-_Sol_Magic_Effect_on_Blood)

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koraput.nic.in/new/right/section.htm
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40. The Samaja, Odia Daily, Koraput, Ed 27-3-2020, page-7. <https://samajaepaper.in/indexnext.php?pagedate=2020-3-27&edcode=79&subcode=79&mod=1&pgnum=1&type=a>

### 3. Discussion, Table 1

41. The Samaja, Odia Daily, Koraput, Ed 17-5-2020, page -7. <https://samajaepaper.in/indexnext.php?pagedate=2020-5-17&edcode=79&subcode=79&mod=1&pgnum=1&type=a>  
Table 1 spans the period of 1975-2020 and the global geo space. Southern hemisphere is conspicuous by absence does not mean that punica does not grow there or anything like. Evidence based occidental model of study apparently commences with anti-microbe efficacy. Ref No. 3 published by the Indian National Science Academy presents a select list of medicinal plants reported to be used in Odia linguistic & of Vipul Singh, *India & Sreemangal Arun* (1) On the basis of great and authority about which consciousness is almost nil. Each refer to the punica. Thus, we may aver that other cultural regions (all nations) may be having other tomes as well. Efforts are scant. However, the rind/carp of the indo ayurvedic member (Fig 1 & 2) has not been used to combat virus until year 2004. Table-I. Also did not use the same as Sati Narayan. We sent a few formulations and fixed dose orals. Any sub spp., can be used.
42. Bhattacharya Deepak, et al., 2013 Transmission Blocking of Year Round Resistant Malaria in Koraput (India) by OMARIA – A New Antimalarial Phytotherapy. *British Journal of Pharmaceutical Research*, Vol. 3, No. 1, pp. 54-77, 2013
43. Baido Ajaya, *Odia Report 2002*, Odia linguistic & Vipul Singh, *India & Sreemangal Arun* (1) On the basis of great and authority about which consciousness is almost nil. Each refer to the punica. Thus, we may aver that other cultural regions (all nations) may be having other tomes as well. Efforts are scant. However, the rind/carp of the indo ayurvedic member (Fig 1 & 2) has not been used to combat virus until year 2004. Table-I. Also did not use the same as Sati Narayan. We sent a few formulations and fixed dose orals. Any sub spp., can be used.
44. Indian Express, J Rey Chowdhury, 01-10-2019. Gandhiji thought instead of concentrating on mass production, we need to concentrate on production by the masses, where jobs are created so that demand too could be created. Dr. Sati Narayan. We sent a few formulations and fixed dose orals. Any sub spp., can be used.
45. Gandhi M.K. An Autobiography (The story of my experiments with truth), 1st Ed. Navivan (Trust, Ahmedabad, 1927; 2<sup>nd</sup> ed. www.myweb.iscsl.co.uk/kenanderson/histomyp.htm/whitemansgrave.html  
being China). Suggests a tangential nexus between census and fruit grown & consumption. Proposes historical & cultural factors apart public money focus during India plan periods. ICAR-NRCP, India is said to have the largest stockpile of Punica related wherewithal for ready deployment. The India National Germplasm Repository of ICAR-NRCP has a Retrieved from <https://encyclopedia.pub/entry/history/show/7399>  
collection of 376 germplasm; 222 exotic germplasm collected from other countries; 140 indigenous including 87 wild types, 55 cultivated/ local cultivars and addition 12 promising hybrid lines (Personal communication from ICAR) [2]. Moot

point is that the member as in Fig-1 & 2 suggests to be neither a wild nor an albino [T-I, SI No.30]. Moreover it is anti-toxin (supporting info; see Ref No.19). Statistical method indicates that punica begs inquest and indo ayurvedic variety the more.

## 4. Persian Sources

Health care has always been technical. Ancient & medieval India had a long period of techno-cultural exchanges with Persia [8][9]. Table-II provides the Persian sources & details thereof along with indications. It bares select Historical treatise and is non exhaustive.

**Table 2.**

Mention of Pomegranate in Persian Works	Covenance	SI No.
Eat sweet and sour pomegranate, because it strengthens man and revives the blood. Imam Reza (AS)	Amjadi et al., 2016 Moaffage Hearviet al., 2010	1
Eat pomegranate with the part where the seeds are located, because it cleanses the stomach, and any pomegranate seed, when placed in the stomach, will bring the heart to life and enlighten the soul & eliminate the temptation of the devil for forty days. Imam Sadegh (AS)	Amjadi et al., 2016 Mohaddese Nouriet al., 1987	2
Antioxidant; Lowering blood pressure; Improving vascular function Lowering blood pressure in people with high blood pressure	Asgary et al., 2015 Avicenna, 2005	3
its compounds, Ellagitannins, Galoutanins, Anthocyanins, Flavonoids, Sterols, Terpenoids, Tannin, Polyphenols, Alkaloids, Organic Acids, B1, B2, C vitamins can be mentioned.	Bayati and Asadi-Gharneh, 2019	4
Antioxidant activity of pomegranate seed oil	Dadashi et al., 2013	5
Antibacterial	Dadgar et al., 2007	6
Prevention of heart disease; Liver fibrosis; Anticancer; Antibacterial; Antifungal	Faraji et al., 2020	7
Stopping tumor growth and regulating the growth of tumor growth-suppressing proteins in the prevention of cancers Controlling the enzymes involved in the synthesis of fats and increasing the synthesis and secretion of insulin from pancreatic beta cells and increasing their sensitivity are the most important mechanisms for reducing fat and blood sugar	Khajebishaket al., 2015	8

Pomegranate cleanses the blood, opens the blood vessels of the body and the abdomen, and Strengthens the liver. Pomegranate is good for jaundice, heart palpitations and acute cough. It smoothes the sound and refreshes the face. It hydrates the body and kills stomach worms.	Mahmoudi, 2011	9
Imam Reza (AS)	Horre Ameli, 1971	
Eat pomegranates, every pomegranate seed that is placed in the stomach will brighten the heart and lullaby or stay away from the devil for forty days. Imam Reza (AS)	Mahmoudi, 2011 Mohaddese Nouriet al., 1987	10
Eat pomegranate to keep your mouth clean and fragrant. Imam Reza (AS)	Mahmoudi, 2011 Momen Tonkaboni et al., 2007	11
Whenever the Messenger of God (PBUH) said a pomegranate, he would not share it with anyone, and he would say that in each pomegranate there is one seed of heavenly seeds.	Mahmoudi, 2011	12
Imam Reza (AS)	HorreAmeli, 1971	
Pomegranate makes the child beautiful . Imam Reza (AS)	Mahmoudi, 2011 Momen Tonkaboni et al., 2007	13
Pomegranate smoke removes insects and destroys them. Imam Reza (AS)	Mahmoudi, 2011 Moaffage Hearviet al., 2010	14
Everyone who eats a pomegranate while sleeping will be safe from their ego until morning.	Mahmoudi, 2011	15
Imam Sadegh (AS)	Horre Ameli, 1971	
Antioxidants; Treatment of urinary tract infections, lowering blood sugar and diabetes, psoriasis, hemorrhoids, high blood pressure and atherosclerosis; Treatment of cardiovascular disease, obesity and high blood pressure; Treatment of acidosis, infectious diarrhea, microbial infections, intestinal worms, bleeding and respiratory diseases. Pomegranate flowers in the treatment of diabetes and asthma, stop bleeding and anti-diabetic drug	Mazanderany et al., 2014	16
Among uterine infections, mastitis, acne, dysentery and oral inflammation.		
In the juice of the fruit and seeds of this plant, strong and active antioxidants.	Mirjalili et al., 2019	17

	Different parts of pomegranate include leaves, pods, roots, fruit pods, pomegranate juice and its seeds, all of which are effective compounds that can not only increase the antimicrobial properties, but also the activity of antia. Antifungal properties	Salahvarzi et al., 2011	18
	وَهُوَ الَّذِي أَنشَأَ جَنَّاتٍ مَّعْرُوسَاتٍ وَعَبَّرَ مَعْرُوسَاتٍ وَالنَّخْلَ وَالزَّرْعَ مُخْتَلِفًا أَكْثَرَهُمُ الثَّمَرَاتِ وَالرُّمَّانَ مُتَشَابِهًا وَغَيْرَ مُتَشَابِهٍ كُلُوا مِن ثَمَرِهِ إِذَا أَثْمَرَ وَآتُوا حَقَّهُ يَوْمَ حَصَادِهِ وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ ﴿١٤١﴾ / سورة ٦: الأنعام	Shirazi, 1995	19
	He brings forth gardens, trellised and untrellised, palm trees and crops, different to eat, and the olive and pomegranates alike and unlike. When it bears fruit eat of it and pay what is due (the zakat) of it upon the harvest day. But do not be wasteful; He does not love the wasteful. (141)/ Sura 6: AL-ANAAM (CATTLE)		
	فِيهِمَا عَيْنَتَانِ تَصَّاحَتَانِ ﴿٦٦﴾ قِيَّامًا لَّيَالٍ رَّبُّكُمَا تُكَذِّبَانِ ﴿٦٧﴾ فِيهِمَا فَاكِهَةٌ وَنَخْلٌ وَرُمَّانٌ ﴿٦٨﴾ / سورة ٥٥: الرحمن	Shirazi, 1995	20
	Therein are two gushing fountains of water. (66) Which favors of your Lord will you both belie? (67) In them are fruits, palm trees and pomegranates. (68)/ Sura 55: AR-RAHMAN (THE BENEFICENT)		
	وَهُوَ الَّذِي أَنزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ نَبَاتَ كُلِّ شَيْءٍ فَأَخْرَجْنَا مِنْهُ خَضِرًا نُخْرِجُ مِنْهُ حَبًّا مُتَرَكَاتًا وَمِنَ النَّخْلِ مِن طَلْعِهَا قِنْوَانٌ دَانِيَةٌ وَجَنَّاتٍ مِنْ أَعْنَابٍ وَالرُّمَّانَ مُشْتَبِهًا وَغَيْرَ مُتَشَابِهٍ انظُرُوا إِلَى ثَمَرِهِ إِذَا أَثْمَرَ وَيَنْعِهِ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يُؤْمِنُونَ ﴿٩٩﴾ / سورة ٦: الأنعام	Shirazi, 1995	21
	He sends down water from the sky, and with it We bring forth the plant of every thing. From these We bring forth green foliage and composite grain, palm trees laden with clusters of dates within reach, vineyards and olive groves and pomegranates alike and unlike. Behold their fruits when they bear fruit and ripen. Surely, in these there are signs for a nation who believe. (99)/ Sura 6: AL-ANAAM (CATTLE)		

**NOTE** : Arabic script & lines to be read from right to left; Table 2.

## 5. Discussion — Table 2

We can see that fruit pomegranate has been the cynosure of the scribes from historical Persian -to- present Iran in vernacular. As compared to the works in Table I & III the works herein commences from 1987 (Sl.2).

**Table 3.** Presents in brief modern evidence based Iranian research works.

Sl. No.	Modern Period, Evidence Method Research Work References; Iranian. ( read with Table-I & end References)	Year
1	Horre Ameli MH. (1971) Vasa-elolshiye.Vol 25, bande 31511. Beirut: Moasese Ahlebeyt; 1725-1644.158.	1971
2	Mohaddese Nouri H. Mostadrekol Vasa-elva Mostanbetol Masael. Vol 13; bande 14829. Qom: Moasese Ahlebeyt; Chapter 1. 1987. p. 83.	1987
3	Shirazi M. Tafsire Nemune. Vol 5.Chape I. Tehran: Darolketab Eslami; 1995. p. 66-68.	1995
4	Avicenna. Ghanoun Fi Aldeb (Cannon of Medicine). Beirut: Aalamy Publications; 2005. p. 2.	2005



5	Dadgar, T., Ghaemi, E., Asmar, M., Mazandarani, M., Bazueri, M. (2007). Antibacterial activities of six medicinal plants against methicillin-resistant and sensitive <i>Staphylococcus aureus</i> . <i>Iranian Journal of Medicinal and Aromatic Plants Research</i> , 23(1), 73-85.	2007
6	Momen Tonkaboni SM. Tohaf Al-Momenin. Edited by Rahimi R, Shams Ardekani MR, Farjadmand F. Tehran: Shahid Beheshti University of Medical Sciences, 2007.	2007
7	MoaffageHearvi A. Al-Abnieh An-Hadayegh Al-Advieh. Tehran : Tehran University; 2010.	2010
8	Mahmoudi, Jalal. 2011. A new review to medicinal plants (fruits and vegetables). Carpi Publications. 431 pages.	2011
9	Salahvarzi, Y., Tehranifar, A., Jahanbakhsh, V. (2011). Relation of antioxidant and antifungal activity of different parts of Pomegranate ( <i>Punica granatum</i> L.) extracts with its phenolic content. <i>Iranian Journal of Medicinal and Aromatic Plants Research</i> , 27(1), 47-56. doi: 10.22092/ijmapr.2011.6562	2011
10	Dadashi, S., Mousazadeh, M., Mousavi, S., Yavari, A. (2013). Study on quality properties and antioxidant activity of the pomegranate seeds of some Iranian commercial varieties. <i>Iranian Journal of Medicinal and Aromatic Plants Research</i> , 29(2), 502-515. doi: 10.22092/ijmapr.2013.2871	2013
11	Mazanderany, M., Ghaemi, E., Bayat, H. (2014). Atecolgy, Antioxidan if part of <i>Punicagranatum</i> var. <i>spinosa</i> . <i>Eco-phytochemical Journal of Medicinal Plants</i> , 2(1), 52-59.	2014
12	Khajebishak Y, Payahoo L. Pomegranate: Its health effects from the Holy Quran and nutrition science view. <i>jiiitm</i> . 2015; 5 (4) : 310-323	2015
13	Asgary, S., Afshani, M., Rafieian-Kopaei, M., Keshvari, M. (2015). Clinical investigation of blood pressure lowering, endothelial function improving and hypolipidemic of pomegranate juice in hypertensive subjects. <i>Iranian Journal of Medicinal and Aromatic Plants Research</i> , 31(3), 418-427. doi: 10.22092/ijmapr.2015.101874	2015
14	Amjadi O, Mousavi T, Rafiei A, Afzali M A, Yousefpour M, Ghaemi A. 2016. Therapeutic and Nutritional Effects of Pomegranate from the Perspective of Islamic Texts, Traditional and Modern Medicine. <i>J Mazandaran Univ Med Sci.</i> ; 25 (134) :374-393	2016
15	Bayati, R., Asadi-Gharneh, H. (2019). Study of Biochemical Compounds from Extract of Peel, Seed and Fruit Juice of some Pomegranate Cultivars ( <i>Punicagranatum</i> L.). <i>Journal of Medicinal plants and By-product</i> , 8(2), 133-141.doi: 10.22092/jmpb.2019.120491	2019

**Declaration :** For Social Welfare ~ Project of Indo - Iranian medicinal plants Database with Shabestar Branch, Islamic Azad University & Social Service & Nursing AND Fight-Cancer at Home, Sri Radha Krishna Raas Mandir Bhubaneswar cum Indian Red Cross Koraput Branch; (both Odisha-India)". Meta data as in Table II & III is acknowledged, with kind regards.

## 6. Discussion — Table 3

As compared to the works in Table I & II the works herein commences from 1971 while in the Occident from 1988; Govt of India from 1990 and by Bhattacharya (co-author) from 1997 for anti-malaria and for anti-virus in 2004 (augmenting info). Medical collages & Med Sc University are seen to be involved (apart individuals and institutions as in Table I & II).

Therefore, we are of the considered view that pomegranate has surely been weighed as a therapeutic member in Persia & also in present day Iran; that there is indeed scope for pan global inter-governmental work for global historiography of this fruit member.

**TABLE 4.** Approved Ayurvedic Texts

SL.No.	Name Of The Books With Publication Details	Year
1.	<b>Rasendra Sara Samgraha</b> of Sri Gopalkrishna ::Commentary by : Pt. Girijadayalu Shastri, Publisher: Chowkhamba Sanskrit Series Office, Varanasi(India),4 <sup>th</sup> Edition -1952	1952
2.	<b>Ashtanga Samgraha</b> of Srimad Vagbhata Commentary by : Vaidyashri Govardhan Sharma Chhangni, Published by :Chowkhamba Sanskrit Series Office,Varanasi(India),Reprint Edition,1954	1954
3.	<b>Yoga Ratnakara</b> ,Commentary by : Vd.shri Lakshmipati Shastri, Edited by : Shri Brahmashankar Shastri Published by : Chowkhamba Sanskrit Series Office,Varanasi(India),Reprint Edition,-1955	1955
4.	<b>Siddha Yoga Samgraha</b> By :Vaidya Yadavji Trikamji Acharya,Published by :Shri Baidyanath Ayurved Bhawan Ltd,Kolkata(India),Fifth Edition-1957	1957
5.	<b>Sushruta Samhita</b> of Maharshi Sushruta Commentary & Edited by : Kj. Ambikadatta Shastri Published by : Chowkhamba Sanskrit Series Office,Varanasi(India),First Edition-1959	1959
6.	<b>Rasaratna Samuchchaya</b> of Sri Vagbhatachrya Commentary by : Kaviraj Ambikadatta Shastri, Published by :Chowkhamba Sanskrit Series Office,Varanasi(India),Third Edition,-1961	1961
7.	<b>Rasaratna Samuchchaya</b> of Sri Vagbhatachrya Commentary by : Kaviraj Ambikadatta Shastri, Published by :Chowkhamba Sanskrit Series Office,Varanasi(India),Third Edition,-1961	1962
8.	<b>Ayurveda Prakasha</b> of Acharya Sri Madhava Cmmentary by : Vaidya Vachaspati Shri Gulraj Sharma Mishra, Publisher : Chaukhamba Bharati Academy,Varanasi(India),First Edition-1962 ,Reprint-1999	1962 & 1999
9.	<b>Rasatantra Sara va Siddha Prayoga Samgraha</b> By Swami Shri Krishnanandaji Maharaj Publisher : Krishnagopal Ayurved Bhawan,Kaleda(Ajmer),First Edition,-1966	1999
10.	<b>Gada Nigraha</b> of Srivaidya Sodhala, Commentary by : Indradeva Tripathy, Edited by Gangasahay Pandey Published by : Chowkhamba Sanskrit Sansthan,Varanasi(India),Reprint Edition-1969	1969
11.	<b>Bhava Prakasha</b> ,: Commentary by : Dr.Krishnachandra Chuneekar et al, Edited by: Dr. Gangasahay Pandey Published by : Chaukhamba Bharati Academy, Varanasi(India) First Edition-1969,Reprint-1999	1969
12.	<b>Bhaishajya Ratnavali</b> : By : Shri Gobindadas, Commentary by: Kj. Ambikadatta Shastri Edited by : Shri Rajeshwardatta Shastri Published by: Chowkhamba Sanskrit Sansthan,Varanasi(India), Fifth Edition,1978	1978
13.	<b>Sahasrayoga</b> : Translated by Dr. Ramnivas Sharma et al , Publisher: Dakshin Prakashan, Hyderabad-2(India),First Edition(Hindi)- 1989	1989

14.	<b>Sharangadhara Samhita</b> : Commentary by : Dr. Brahmananda Tripathy, Pulished by : Chaukhamba Surbharati Prakashan,Varanasi(India) First Edition- 1990	1990
15.	<b>Ayurveda Sara Samgraha</b> , 19 <sup>TH</sup> Edition, -1997 Shri Ramrakshak Pathak, Published by :Shri Baidyanath Ayurved Bhawan Ltd, Nagpur,(India)	1997
16.	<b>Bhava Prakasha</b> ,: Commentary by : Dr.Krishnachandra Chunekar et al, Edited by: Dr. Gangasahay Pandey Published by : Chaukhamba Bharati Academy, Varanasi(India) First Edition-1969,Reprint-1999	1999
17.	<b>Brihat Nighantu Ratnakar</b> of Lala Shaligramji Vaishya, :Khemraj Shrikrishnadas pulations,Kalyan,Mumbai  First Edition-1999	1999
18.	<b>Ayurveda Samgraha</b> :By Kj. Debendranath Sengupta et al Published by Dipayan, Kalkata (India)  First Dipayan Edition(Bengali),1999	1999
19.	<b>Charaka Samhita</b> of Agnivesha, : Commentary by : Pt.Kashinath Shastri et al Editorial Board : Pt. Rajeswardatta Shastir et al Published by : Chowkhamba Sanskrit Sansthan,Varanasi(India),5 <sup>th</sup> Edition,2001	2001
20.	<b>Ashtanga Hridaya</b> of Srimad Vagbhata Commentary by : Dr. Brahmananda Tripathy, Published by : Chowkhamba Sanskrit Pratisthan, Varanasi(India), 9 <sup>th</sup> Edition-2002	2002
21.	<b>The Ayurvedic Formulary of India</b> Part-I vol-VI, 2 <sup>nd</sup> Edition 2003 The Controller of publications,Govt. of India, Civil lines, New Delhi	2003
22.	<b>Bangasena Samhita</b> of Vangasen,Commentary by : Pt.Harihar Prasad Tri Pathy, Publisher: Chowkhamba Sanskrit Series Office,Varanasi(India),First Edition-2004	2004
23.	<b>Rasa Yoga Sagara</b> : Commentary by : Vaidya Pandit Hariprapanna Sharma, Chowkhamba Krishnadas Academy, Varanasi(India),Reprint Edition-2004	2004
24.	<b>Arka Prakasha</b> of Lankapaty Ravana, : Commentary by : Indradeva Tripathy, Published by :Chowkhamba Krishnadas Academy, Varanasi(India), 2 <sup>nd</sup> Edition,2006	2006
25.	<b>The Ayurvedic Pharmacopoeia of India Part-I vol-VI</b> , First Edition -2008 The Controller of publications,Govt. of India, Civil lines, New Delhi	2008
26.	<b>Chakra Datta</b> of Shi Chakrapani Datta, Commentary by : Vaidya Ravidatta Shastri, Pulished by : Chaukhamba Surbharati Prakashan,Varanasi(India),Reprint Edition-2012	2012

NOTE : Ref No 6 gives a select list of Palm Leaf Manuscripts as are preserved in the Odisha State Museum, Bhubaneswar. Digital copies available. **Indian Journal of History of Science**, Indian National Science Academy, Vol. 49.3, pp. 294-97.

## 7. Discussion – Table 5

Table 5 members all have umbilicals to periods like 2000 – to – 5000yrs before present. The translation based recessions and resensions of that & those hoary Classical Ayurvedic treatises are noted from 1952 (India 1<sup>st</sup> 5yr plan). In these classical medicinal texts the punica is mentioned aside all other medicinal herbs (it is not the sole focus). Moreover, the fruit used in the Persian and Occident studies be the juice variety. Whereas, in the Ayurveda classical Texts (Table-iv) the member as in Fig-1 & 2 be the sole active pharmaceutical ingredient (API). Pan globally it is exclusive & novel. Hence we indulgently term this API as *Punica Ayurvedica*. India obtained independence in 1948. Mahatma Gandhi assiduously used only Ayurvedic medicaments (Indian national school of medicine).

**Table 6**

SI No.	Theological Sources : Brief Statement	Debatable Datum
1	Judaism : Pomegranate in The HOLY Tanakh <a href="https://outorah.org/p/5701/">https://outorah.org/p/5701/</a>	Pre Christ
Remarks	By post fix 'ism' we do not mean any dogma nor anything low or luminal save & except mere convenience.	
2	Hindu : The Sanatan Texts are so very vast and myriad; mostly in Sanskrit lingua,.  Sanatan (perennial) also include a vast repository of multi-disciplinary texts of Vedic Vigyan (plural sciences). Sanskrit = self gelling : highly technical lingua not mastered by present author group is left out. Require inquest in association with authorities versed in the art.	3000-to-1000yrs pre to Christ.
3	Christianity : 4 (supposed) mentions in the Bible. <a href="https://bible.knowing-jesus.com/topics/Pomegranates">https://bible.knowing-jesus.com/topics/Pomegranates</a>	Between Charlming – Renaissance c.1400 A.D. – 1700 A.D.
Remarks	Available as quotes	
Ayurveda (plural health) texts have been mentioned as separate Table No IV		
4	Buddhism : (i) Associated with mind change of the live infant flesh eating demon god Hariti – all Buddha domains (ii) Choice wedding gift in China. <a href="http://www.amazing-pomegranate-health-benefits.com/pomegranate-buddhism.html">http://www.amazing-pomegranate-health-benefits.com/pomegranate-buddhism.html</a>	7 <sup>th</sup> -11 <sup>th</sup> A.D.
Remarks	Philosophy expounded by Buddha was Hinayana ( lesser path) c.6 <sup>th</sup> BC to c.6 <sup>th</sup> A.D. No mention.No Gods; No demi gods  All this noted in Mahayana literature ( 7 <sup>th</sup> -11 <sup>th</sup> A.D.); Mahayana ( Great path).	
5	Islam : The pomegranate (ar-Rumman in Arabic), is mentioned thrice in the Qur'an. In the Qur'anic verse quoted to the right, pomegranates are mentioned as one of heavenly fruits. <a href="https://aboutislam.net/muslim-issues/science-muslim-issues/plants-quran-part-3-pomegranate/">https://aboutislam.net/muslim-issues/science-muslim-issues/plants-quran-part-3-pomegranate/</a>	7 <sup>th</sup> -17 <sup>th</sup> A.D.

<b>Remarks</b>	Muhammad to End of Moghul Empire (india).	
6	Unani Medicine (india) : “Unnani Tibb” describes the use of Pomegranate. Indo Islamic School of medicine ( Under Govt of India).	c.1600-1900 A.D.
<b>Remarks</b>	See Table – I No 27 & Table II No 15.	
7	Naturopathy : Herb of the Month: Pomegranate  <u>12/2016, Brisbane Naturopaths &amp; Wellness Centre.</u>  <u><a href="https://brisbanenaturopaths.com.au/2016/12/04/2016125herb-of-the-month-pomegranate/">https://brisbanenaturopaths.com.au/2016/12/04/2016125herb-of-the-month-pomegranate/</a></u>	2016
<b>Remarks</b>	Since all such ancient practices use whole herbs and that modern sciences have evidenced that whole herbs when distilled; refined; fractionated and only the most potent fractions are used drug-dose therapeutics take a sea change. However, whole use schools have their good counter arguments in place and hence such practice gets to be called 'Naturopathy" i.e., treatment with items of nature natural. Govt of india recognises 'naturopathy'.	

## 8. Discussion — Table 6

Table 6 is a micro representation of the idea that pomegranate had been the cynosure of various theo-philosophical societies, groups, guilds and related bodies in various parts of the world in various times in relation to good health. Logically these be the then therapeutics. Our hidden agenda is to subtly emphasise the historical fact that pomegranate was always considered also super safe. Tried a connect with human heritage. We only emphasis that vis-a-vis viremia our points among others are (i) seeds are contra (ii) rest of the fruit anti-virus- no wastes (iii) evidence based studies indicate as anti-SARS sub spp wishfully included (iv) punica is the focus in all our cited manuscripts (v) Punica Ayurvedica is unknown outside india.

### 8.1. Ayurvedic Punica's ( Rind )



Fig-1



Fig-2



**Figure 3**



**Figure 4**

Fig-1 : Classical indo Ayurvedic API – The Dalimba (P Granatum). Fig – 2 : its thick rind. Either to scale. Best specimen. Highest yield of drug moiety from rind

The classical indo Ayurvedic member (Fig-1 & 2) has no juice, no other confounding and or confabulating and or any other extra moiety excepting Potassium as an anomer. Its rind is thick; mini seeds; little aril; such rind\carp is used only; on drying in air\sun becomes bone dry, stone hard; brown-amber colour; fine mesh powder of excellent bulk density. Its seeds have opposite effect & hence are discarded. And whereas, the commercial punica is well known to have other compounds; a leathery rind\carp that is also thin and degenerates to black when air\sun dried. In the traditional texts the classical indo Ayurvedic punica ( *Punica Ayurvedika* ? ) is noted to be used in 'n' number of formulations; clinico-patho indications; ways and means save & except fever; angina pectoris; and or *swasa-kassa* (COPD). Covid-19 because COPD & angina pectoris onset heralds grave prognosis i.e., 'end of life stage' <sup>[10][11][12][13]</sup>. To arrest such sad & disastrous clinical situation every wherewithal however small or simple should be explored. There are no alternatives.

ICAR has the largest stockpile of punica cum related wherewithal for ready deployment (supporting info). Indian private nationals & entities jointly & severally with Govt of India have invested huge sums of personal & public money for punica orchards; commerce; fruit & rind extraction; processing; packaging; etc., (SAARC nations included). Yet the rind's powder as a whole nor its extract has ever been utilised during pressing socio-national cum economic existential crisis viz. Covid-19. Hence we break ice & present formulations in Tablet & Capsule. Being fully diabetes compliant. Seeds discarded full; aril selectively. Toxicity on Dermal Fibroblasts <sup>[14][15]</sup>; on MRC-5 cells <sup>[16]</sup>; Selectivity Index <sup>[17]</sup>; Brain Malaria <sup>[18]</sup>; Anti-inflammation <sup>[19]</sup>; adjuvant role with Choloroquin <sup>[20][21]</sup>, etc., studies have indicated 'complete non toxic and high safety'. Moreover; anti-virus efficacy has been reported in 2004 <sup>[22]</sup> through to 2020 <sup>[23]</sup>. No other tropico-deciduous year long fruiting member has so thoroughly been evidence based studied by acknowledged teams of experts from nations across over the last 30year period. "Punica combats covid".

## **9. Commercial Juice Grade Punica**

Save & except the classical Ayurvedic punica the world has a very large variety of the cultivar <sup>[24]</sup> and genetic diversity <sup>[25]</sup>. The juice yield varies in ml/per Kg of pulp, so do the taste and the drug moiety & other biochem content. Irrespective the juice remains tasty; physiologically useful; anabolic. We use (i) the classical Ay punica for tablet & capsule (ii) the commercial (leathery-large) juice grade punica for formulations in suspension forms. Suspensions being fully compliant even for acutely morbid; convalescence patients; mother & child; geriatric; catabolic; anabolic; sportsmen; anti-fatigue; general; and as pseudo psycho-somatic tonic. Suspensions being not suitable in status diabetes. Only seed is discarded. Aril & rind & internal musageous materials & tissues (all) are pulped-squeeze extracted for they contain identical drug moieties.

## 9.1. Stabilisation

Punic juice is by nature stable at RT. Suspensions need to be stabilised for attaining shelf life and for transit handling vortexes. For this we incorporate standard safe well accepted Ayurvedic & Allopathic & herbal & soft drink making methods.

## 10. Extraction, Purification & Fractionation Aspects

For the Commercial-fruit juice industry specific use there are a number of methods developed during the period 30yrs pre to present apart Sreeram's [26] and Reddy's methods [27]. All are relied upon.

For extraction from rind, we adhere to Del Agili's [28] Jean Barnard [29] and team's methods, wherein Bhattacharya (co-author) is a member for these were done exclusively for pathology-therapeutics. Let the family welfare & health care providing stake holders subsume all these wholesomely.

## 11. The Formulations

### 11.1. Capsule making

Can be hand made – home made. About to ripe stage fruit (choloroplast); cut, discard aril & seeds. Seeds have opposite moiety. Aril is musgenous, less yield, hygroscopic, pro-mycotic; tends to clump-assist degeneration- not suitable for capsulation (for tablet ok for it imparts binding property, specially finger rolled pills as in Ayurveda along with anti mycotic & sporofic *asafoetida* 1%). The rind\carp on air or sun expouser (3-5days) become bone dry & stone hard; splits on thrashing turning to fine mesh powder of yellow-brown colour. The deeper the tone higher be the moiety yield. Fill in 00 capsule @ 400-500mg. Ready to use.

### 11.2. Tablet making

Finger rolled : Carp & aril powder + high pKa value compatible binder; 250mg per pill bears shipment vagaries well. Low compression force is best. Binder = 5 to 10% *Diospyros Melanoxylon* acts as glue cum synergic\adjuvant moiety = ideal best. Short shelf.

Machine Pressed : High kNf (1kg movement @1mt per sec per sec) results in coupling of acid + tannin moieties = new compound formation and or degeneration; liquefaction (early decay onset); etc. High kNf not advisable. Binder & or coat as in above finger rolled or any from conventional pharmacy.

Nano Tech : Purified fractionated (sans seed). Whole punic has numerous constituents which all an be embedded in a novel tablet using Nano technology [30]. Retard delivery – gut stage specific. Most Broad spectrum. Superb results.

**Dose** : For CoV-2 spp. Anecdotally arrived at. Anabolic normal adolescent to normal Adult 30 to 60Kg. Else, consult family physician.

Prophylaxis suggestive : 1 cap or Tablet once daily (OD) every 3<sup>rd</sup> day; + citrated drinks. <10yrs ½ amount. Or as advised by Family physician. As clinically indicated (ACI).

Acute Viremia : 2 cap or Tablet at a time BD (*bis die sumendum*) or TID (*ter die sumendum*) for initial 48-72hrs (as clinically indicated) with water ad-libitum along with conventional medicaments. ACI.

Mild Viremia : 1 or 2 cap or Tablet at a time BD with water adlibitum along with conventional medicaments for 5-15 days with water adlibitum along with conventional medicaments + citrated drinks. ACI.

### 11.3. Suspension

Diabetic : Carp\rind powder soaked 4-6hrs., in I V grade Normal saline or in de-ionised, demineralised, tripled distilled water or injection water; bag centrifuged; harvested and bottled. Diabetic complaint 100%. Excellent shelf life 2yrs almost. Crushing of seeds to be avoided. Addition of 10% *Diospyros Melanoxylon* v/v filtered whole extract imparts wider spectrum. Co-benefits : excellent for appetite; hepatocytes; gut persistalsis; hematinic and adipose brown or white; menarch women lower abdomen architecture & reproductive organs performance. Preservatives not called for (least effective). Lower concentration = longer shelf.



**Lyophilised** : Lyophilised powder of a concentrate of the above can be prepared via tray system on large scale for reconstitution and use on desired volume basis. Light, fluffy and ready mixable; colloidal and all oils and enzymes preserved which all can be brought back to freshness on reconstitution. Complete reduction of gas bubbles. 100% efficacy retention enabling cross continent transshipment; armed forces destinations. Liquor admixable. Peerless.\_\_\_\_

Non Diabetic : Whole fruit along with Carphind & aril all fresh & wet (sans seed); dip & dunk washed; rinsed well (& or dry air blast dried at 0°C); slow cold pressed (any cultivar/sub spp.) + as optional whole Mohula (*madhuca indica*) concentrate 5% w/v or mohula wine 5% v/v or any type of country wine same vol; + Clove extract 1-5% optional (excellent up-regulator for de-virusing of the fossa & epiglottis); sterile fructose 5% (or sterile gaggery or Ayurvedic sterile Nabata 5% w/v (see sterilisation); All admixed; slow homogenised 30minutes. All process @ 2-4°C; <Rh 80% (ambient room). Addition of 10% *Diospyros Melanoxylon* v/v filtered whole extract imparts wider spectrum cum lingering taste = release of digestive saliva & pancreatic amylase. Ph - <4.4. No seed crushing.

Geriatric (winter) : Geriatric stage is a near continuous auto systemic inflammation stage. In winter temperature adjustment is more impaired due to weak vessels which become leaky more and atopic hemodynamics. This is age related and height related vasculitis & co-morbidity. Apart this there are other co-morbidities viz., IBS; sleepless; restless; listless; constipation; indigestion; epigastritis; spastic motion; atopic heart beats; psycho depression (mostly pseudo); idiopathic dermal itching, erythema, adipsialhypodipsia, dysphagia; UTI &/or incontinence; etc.

FORMULATION : whole juice 70% + Madhuca indica 15% + Raisin extract 10% + ethanol 5%.

Geriatric (summer) :

FORMULATION : whole juice 70% + Madhuca indica 10% + Dates extract 10% + Orange or lemon 10%. + ORS (daily limit 5mg).

Constipation :

Normally in the semi arid and arid geographic regions constipation is writ large.

FORMULATION : above on dates & over ripe peach porridge for non diabetes. lialukhuda\khai porridge for diabetes.

Bowl non forming Individuals : geriatric stage is also associated with atypical – asyclic bowl formation failure. This forces non charity fasting with psycho-somatic consequences.

FORMULATION : (a) Any of the formulations + (b) green banana porridge + (c) gram flour dumplings (Besan) + &/or tapioca. B, C, D being cooked. Option : boiled potatoes &/or eggs.

Psycho Somatic Conditions (placebo) : During work life period numerous medicaments are adhered too to enable fast forward alert & agile attitude. On retirement an abrupt situation of 'no need' arises leading to mood swings. This apart there are 'n' number of clinic pathological, mental, professional, age related situations and conditions whence the human mind suffers median & long period auto psycho – somatic syndromes; apart mood swings. A pleasant placebo be the medicament of choice. Any of our formulations can be advised by the family physician as a 'placibo'; all sex; all age groups.

Co-benefits : excellent for appetite; hepatocytes; gut persistalsis; hematinic and adipose brown or white. NOTE : seeds contain growth & catalytic factors which up-regulate systemic inter molecule-actions specially during still storage (with the suspended enzymes & essential or non oils resulting in compounding, precipitations & decay).

**Spray Dried** : A spray dried powder of a concentrate of the above can be prepared via large slow rotating drum dryers (milk powder type) of 40°C at 27% Rh; 700-800hPa room pressure; 30°C ambient room RT on large scale for reconstitution and use on desired volume basis. Light, crystalline, free flowing, ready mixable. 90% efficacy retention enabling large vol variable tin, poly packaging; large scale consumption, and cross continent transshipment.\_\_\_\_

**Pectic enzymes** : Is generally advised & adhered to for attaining translucency (cloud effect reduction) <sup>[31]</sup> pre final seal. Our view is that this is not future perfect. Pectic enzymes are catabolic; catalytic; high affinity for basal lamina; oncogenesis; reactive; deleterious for gall bladder and fallopian; not supported by gray haired drug designers or family physicians.

**Colorants** : Romantic purple-pink being the colour of the juice no additives envisaged.

**Preservatives** : Ellagic acid & Ellagitanins (gallagic group & anthocynins) severally or jointly have excellent to peerless keeping qualities upto Ph 4. Solid or suspensions.



Cytiric acids is contra indicated (shall because cement formation on vessel/container wall & granules). *Note* : auto formed granules are rock solid also beget altered chemistry.

**Dose** : For CoV-2 spp. Anecdotally arrived at. Anabolic normal adolescent to normal Adult 30to 60Kg. Else, consult family physician.

A mouthful, swirl, gurgle & gulp ½ twice as per individual preference. BD @ 12 hr interval. ½ for child <10yrs. BD = Or sip – swirl-gurgle & gulp TDS.

**Container** : Best is siliconised sterile glass bottles with seal caps and the juice being sealed with nitrogen (inert gas). PET bottles de-gas over long (antimony formation & trace toxins) specially with catalytic materials like enzymes; acids. However, for periods such as 6 months and specially for cool shipments and in-fridge keeping consumable juices PET containers are OK (economic).

**AViCo** : Upper respiratory tracts mostly get effected by virus. 90% of the virions get physically trapped in the epiglottis – the 1<sup>st</sup> physical natural barrier). CoV-2 has a long life, is tenacious, remains in the fossa and hence >10% pass into the lungs by & by. Therefore, an Anti-Virus Chocolate (AViCo); and AVA i.e., a paste (*ahalia*) can be prepared as follows. Aril paste 50% + condensed milk + *Madhuca indica* paste + processed tobacco leaf + coffee, etc., + sugar as required. Measure v/v or w/w. It will be of special use for the infant, child, the geriatric group and or by the fast forward executive. Multi moiety prophylaxis. Natural physio compatible. Non confounding nor confabulating with life style medicaments.

**Sterilisation** : Whole fruit crushing and or use of raw part sun dried parts & parcels also transports pathogens; effluxes pathologic moieties; pores & cysts of bio-active zoonotic and phyto parasitic members. All these contribute to product degeneration and or to up-regulating pathologies post ingestion = Clinical headache. Some with delayed mechanism ( in vivo incubation and or due dormant\active-incubation-gestation periods). Hence we recommend Gamma irradiation @ 20kilo gray for 1-2 hrs. This shall sterilise to pharma grade. The Govt. Of India has set up and has given licence to many a private entities to assist the herbal industry & research with such objectives. Heat &\or autoclave sterilisation also may be considered @200°C for 1 hr.

**Special Note** : Sepsis, malarisis & cancer present near similar (clinically confounding & perplexing) very high order of systemic spiralling inflammation (also SARS, MERS & Covid). Pomegranate juice has very effective anti-oxidant and above all anti-inflammatory efficacy even in severe malarisis <sup>[32]</sup>; immensely compatible with paracetamol; on the ailing and or the geriatric or convalescent physiology (clinical observation & Blood count methods/pathological tests). Therefore, administering such oral food along with Paracetamol (250-450mg per day as clinically indicated i.e., sub clinical dose) will lead to precipitous wane of myalgia (become afebrile). Inflammation & return to normal of the WBCs can be viewed via field microscope as in Ref 32. Very useful shall it be also in seasonal viremias.

## **12. Hematological Aspect**

Squeezing whole pomegranate fruit yields copious ellagitannins (highest among fruit juices). Such tannins are largest polyphenol compounds. Includes ellagitanins & gallagic group which all are APIs having agro-met & or sub spp., based variability. The gross yield of such APIs being greater from the crushed/squeezed rind and mesocarp (harsh taste) of the fruit than from the fresh aril (sweet taste). This scarlet-violet tasty juice has been used for centuries since ancient culture periods for 'medicinal purposes' <sup>[33]</sup> We presume haematological issues as also included in such over-arching historical & cultural averment/s.

We are of the opinion that ellagic i.e., gallagic group has more specificity for RNA virions while ellagitanins for all stages of the anthropomorph malarisis. In the gastric chamber either forms the other & vice-versa. Jointly or severally either also conjugate to form metal-ion complexes and trigger intrinsic coagulation <sup>[34]</sup>. Coagulation is easy manageable <sup>[35]</sup>; is not an issue. This is because the gallagics are 300-325 Dalton, and the anthocynins (1000-1200 Dalton) are stable, slow – to – non reactive, good paramagnetic property, process scavengers, have salutary effect affinity for smooth & involuntary laminas, etc. The virion & the acid-tanins are all enantiomers (compound-compound affinity interaction). The metallo-protienase are biogenic & reversible (Hb+gallagic+{pro}thrombin). This is precisely why we have advocated formulations for geriatric stages and in vasculities. 12hrs post bellyful ingestion of such juice blood donation shall be of fruition for the warm whole blood handling, transit, shelving & pheresis processes apart for the receiver as well yeomanly.

**Cancer & Punica** : We intend to underline that Punica rind powder @ 450mg in 00 caps are in extensive use (as non medicine) in all forms and stages of malignancy at MRC-Vedic Anti Cancer as part of 'social contract' and also in a rural Red Cross mini clinic since 1998 <sup>[36]</sup> and for cancer nursing & in end of life stage support <sup>[37]</sup>.

### 13. Multi-Drug Therapy Compatibility

Koraput is malaria drug resistant & mutant variety core endemic hub of India. CQ is considered as 'dud' therein. In ref No. 21 it has been indicated as to how Bhattacharya & Pradhan along with the officials of the Collector cum Dist Magistrate; nurses (mostly Christian missionary) had re-ennobled (such dud) CQ by co-administering with *Punica Ayurvedica* powder in hand made cap form 'OMARIA-AVIR'. Bio-chemically in gastric & all gut phases CQ + Anthocynin = hydroxyquinone a new compound is formed that can hydrolyse back to constituent moieties and again re-form; long duration blood borne & bio-availability (least systemic loss; no contra; no delayed side effect). All this being abundantly articulated in public since 2000 (BBC news, Table I, Sl. No. 9). There is compound - compound interaction resulting in new (non-dimmer) physio compatible compound formation viz., HCQ; efficient uptake; longer blood life than CQ; down regulation of all side effects of CQ (even loading bolus dose) due the scavenging cum anti-inflammation efficacy. CoV-2 alike malarial hemoparasite is a non haem-lympho genic charge particle that has affinity for the WBCs and the cytokines. Hence, we are optimistic that concurrent use of pomegranate juice and its products (alongside all types of therapies) shall be very useful; more so in patients who all be immunized (future date).

### 14. Medico Legal Aspects

Allopathic drug discovery has historically been inspired by mother nature [38]. Hand making – home making of food based items are statutorily non-drugs. They be home remedies. Scientific evidence backed home remedies are just a logical step forward of the ancient 'very long period observation based studies'. In India's vast country side family inheritance based Ayurveda practitioners provide the bulk of the macro-level health care in micro scales. They come under the classification of 'tiny' & 'micro-industry' & 'cottage industry' (all are hand to mouth- bare sustenance level self employment efforts). Rural folks also repose greater faith on such school of medicine. Furthermore, internal (so called) medicine comprised of fruit parts and parcels are safe. Additionally, peer reviewed research documents evidenseth that *Punica Granatum* (dalim/bedana) based medicaments are non-toxic. Conventional medicines can also be made. Moreover, the Clause 32 (1), p.19. of The (indo) National Medical Commission Bill, 2019 (Bill No. 185-C of 2019; Passed by LOK SABHA, 29.07.2019); enjoins upon the Union and her constituent provinces to incorporate and empower "Community Health Providers" as the initial health service and health care [39]. Inter-alia this means that M Scs; Ph.Ds; Drug Discovery and NGO people who all have more than 1 decade of related community health care-social work are now (deemed licentiate as) "Community Health Providers". A anti-virus licensed product by name AZAD (same as AVIR) is noted to have been issued by Gujarat Govt vide No. GA\1546; M/s Durga Ay Pharmacy; & GA\1531; M/s Lincoln Pharma). Thus there is precedence. Therefore, our considered view is that the formulations if done manually by hand at home they then do not attract any licensing requirements. Else, A re-reading of the law may be necessary.

### 15. Discussion Cum Conclusion

We note 2 types of *punica granatum* (i) non juice variety & no sugar/fructose (ii) juice variety – has sugar & fructose. The member as in Fig-1 & 2 are non juice variety, exclusively used in Ayurveda for therapeutics (geographical S E Asia). The indo Brahmins (scholars/erudite) & the well-to-do among the non-Brahmin families plant this variety of the cultivar at entrance beside, apart using its flower for certain rituals (region specific). It is not an albino member nor is it wild. It is part of medicinal heritage. We suggest the name *Punica Ayurvedica*. From 2004 to 2020 member Fig-1 & 2 has been in slow flow continuous use in Bhubaneswar and specially in the Indian Red Cross Society's charitable dispensary cum clinic at Koraput, Odisha under banner AVIR : anti-virus india research & licensed label AZAD [40][41] & OMARIA (Orissa Malaria Research Indigenous Research Attempt) and as EAK, respectively. This proves its efficacy as anti-virus and as anti-malarial [42][43]. Pan global dominancy in raw material (fruit-Punica); 1.3 Billion census that is mostly joint or large family based & culturally & ethnically intently social (distancing is looked upon with disdain in India); low electronic coverage (lock down seriously debilitates economy); a huge pharmaceutical nationwide base (underutilised); nil pure/mono punica formulations with a crying patho-clinical need; unlimited market & enabled youth employment potential. Our objective herein is to discuss all such supporting aspects AND enumerate hand makeable, home makeable 'formulations'. Hinting at length the related historiography of the candidate source/s; in brief bio-mechanics; drug kinematics; pharmacognasy; formulation making; principles and practices; drug-dose idea; etc., opportunities for topical levity. Table I-V are not exhaustive.

In Iran (historical Persia; present day geographical middle east) scientific studies of the juice variety pomegranate was research published in 1971 followed by Europe 1988; USA 1989; India 1990 (limited by our search). SARS-CoV 2 is an RNA particle. RNA particles of pre CoV-2's susceptibility against both the types of granatum well stands out in some light affirmatively as transpirations herein. Either can be used to make exclusive formulations and supplements; etc. Moreover, punica is pregnancy safe; hematinic; has Potassium as an anomer [see R-16]. Potassium moiety is very helpful

in therapeutics, specially in Brain malaria; muscular atrophy; general acute morbidity and in convalescence. However, inspite of decades of such foundational work there are no formulations et.al., that an average house hold head may buy off shop. In the out, there is a crying need. Hence we have given formulations and making techniques both by hand at home and with machines at factories. All covid carriers cured; dormant and or asymptomatic and their immediate close contacts shall benefit from such cottage industry and or industrialised products. The Father of the Indian Nation Mahatma Gandhi supported "production by the masses & for the masses" <sup>[44]</sup>. He never used anything other than Ayurvedic medicaments <sup>[45]</sup>. India has a huge stockpile of punica to arm the world with. Our formulations are a frank nascent effort towards "Granatum Combatums Covid" i.e., "Fight Covid At Home".