

## Herbal Milk Smoothie Supplemented with Double Emulsion Containing *Amla*

<b>Salient features</b>	<ul style="list-style-type: none"> <li>➤ Double emulsion matrix for the encapsulation of aqueous extract of <i>Amla</i>.</li> <li>➤ Herbal milk smoothie supplemented with double emulsion containing <i>Amla</i>.</li> <li>➤ Herbal milk smoothie as a functional beverage to meet the consumer demand for health foods.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>➤ Compared to garlic, Ashwagandha, Tulsi, Roselle, Ginkgo, <i>Amla</i> has the high antioxidant activity.</li> <li>➤ Herbal milk smoothie has the Prophylactic Effect against CVD and Associate Risks</li> </ul>
<b>Process Technology / Product developed by</b>	<p>Dr. (Mrs.) Shaik Abdul Hussain, Division of Dairy Technology National Dairy Research Institute (NDRI), Karnal, Haryana <a href="mailto:abdulndri@gmail.com">abdulndri@gmail.com</a> <a href="mailto:abdulndri2006@gmail.com">abdulndri2006@gmail.com</a></p> <p>Dr. Sathish Kumar, ICAR-NDRI, SRS, Bangalore</p> <p>Dr. Latha Sabikhi, Dr. A.K. Singh, Dr. Rajan Sharma, Dr. Suman Kapila, NDRI, Karnal, Haryana.</p>
<b>Year</b>	2016-17
<b>Source of funding</b>	MoFPI
<b>More information</b>	<p><b>Status of commercialization / Patent / Publication</b></p> <p>Chaudhary, N., Devi, S., Sabikhi, L., Hussain, S.A., Kumar, M.H.S. and Kapila, S. 2019. Encapsulation of <i>Emblica officinalis</i> in W/O/W double emulsion: Controlled release study &amp; bioactivity <i>in vivo</i>. Poster presented at 47<sup>th</sup> DIC, Patna, Bihar, 7-9 Feb.</p> <p>Chaudhary, N., Sabikhi, L., Hussain, S.A., Chaudhary, U. and Kumar, R. 2018. Characterization and storage studies of <i>Emblica officinalis</i> encapsulated double emulsion. Poster abstract at 19<sup>th</sup> IUFOST World Food Science and Technology Congress, Mumbai, 23-27 Oct.</p> <p>Chaudhary, N., Sabikhi, L., Hussain, S.A. and Kumar, S.M.H. A comparative study of the antioxidant and ACE inhibitory activities of selected herbal extracts. Journal of Herbal Medicine, doi.org/10.1016/j.hermed.2020.100343.</p> <p>Chaudhary, N., Sabikhi, L., Hussain, S.A., Kumar, R. and Choudhary, U. Emblicanin rich <i>Emblica officinalis</i> encapsulated double emulsion and its antioxidant stability during</p>

---

storage. European Journal of Lipid Science and Technology, <https://doi.org/10.1002/ejlt.201900316>.

Chaudhary, N., Sabikhi, L. and Hussain, S.A. Emblicanin rich *Emblica officinalis* extract encapsulated double emulsion: controlled release of bioactive during phagocytosis and in vitro digestion. Journal of Food Science and Technology, <https://doi.org/10.1007/s13197-019-04171-0>.

Chaudhary, N., Sabikhi, L., Kumar, S.M.H. and Jha, A. Plant phenols and their health-enhancing properties. International Journal of Food, Nutrition and Dietetics, 4(1): 69-79.

Chaudhary, N., Devi, S., Sabikhi, L., Hussain, S.A., Kumar, M.H.S. and Kapila, S. Encapsulation of *Emblica officinalis* in W/O/W double emulsion: Controlled release study & bioactivity *in vivo*. 47<sup>th</sup> DIC, Patna, Bihar. 7-9 Feb., 2019.

Devi, S., Hussain, S.A., Kapila, S., Sabikhi, L. and Kumar, S.M.H. Therapeutic role of Amla encapsulated double emulsion supplemented smoothie in CVD rats. Third Convention of Society of Veterinary Biochemists and Biotechnologists of India (SVBBI) and National Symposium on Bridging Biochemical Interventions and Environmental Remediations for One Health Improvement, College of Veterinary Sciences, LUVAS, Hisar (Haryana), 2-3 Nov., 2018.

Chaudhary, N., Sabikhi, L., Hussain, S.A., Kumar, S.M.H. and Kapila, S. 2018. Preparation of *Emblica officinalis* (Amla) encapsulated stable W/O/W double emulsion and its controlled release study, International Conference on Rural livelihood improvement for enhancing farmers income through sustainable innovative agri and allied enterprises (RLISAAe), held at BIT, Patna, Bihar, 30 Oct. – 1 Nov.

Chaudhary, N., Sabikhi, L., Hussain, S.A. and Kumar, S.M.H. 2018. Development and characterization of *Emblica officinalis* encapsulated double emulsion for supplementation in milk smoothie. National Conference on Emerging and Sustainable Technologies in Food Processing (ESTFP-2018), Department of Food Engineering and Technology (FET), Sant Longowal Institute of Engineering and Technology, Longowal, Punjab, 15-16, March.

Chaudhary, N., Sabikhi, L., Hussain, S.A., Chaudhary, U. and Kumar, R. 2018. Characterization and storage studies of *Emblica officinalis* encapsulated double emulsion. 19<sup>th</sup> IUFOST World Food Science and Technology Congress, Mumbai, 23-27 Oct.

Chaudhary, N., Kumar, S.M.H. and Sabikhi, L. 2016. Comparative evaluation of antioxidant activity of selected herbs for potential application in food and dairy matrices. 44<sup>th</sup> DIC, ICAR-NDRI, Karnal, 18-20 Feb.