Auradha Pol et al., Biochem & Pharmacol 2013, 2:4
http://dx.doi.org/10.4172/2167-0501.S1.003

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October 21-23, 2013 Radisson Blu Plaza Hotel, Hyderabad, India

Super critical extraction method optimization of Seabuckthorn (SBT) berry oil B.O: Exploiting its role in anti-ageing

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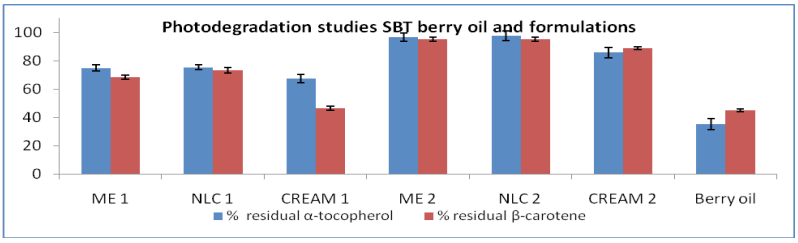
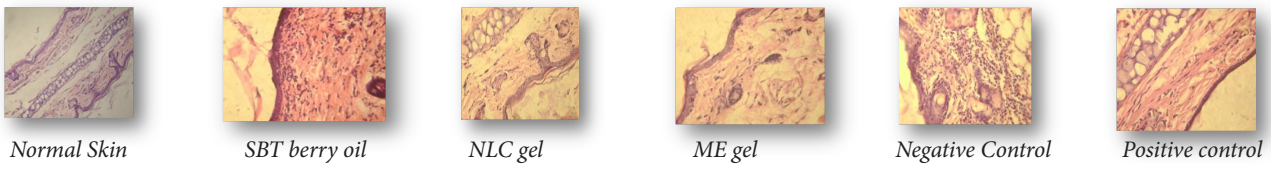
Hippophae rhamnoides, (SBT), extracts are widely used for treating various skin disorders owing to the presence of large amount of antioxidants and phytoconstituents. The SBT berry oil was extracted by supercritical carbon dioxide extraction from dried berries. The extracts were standardized using UV, GC-MS, antioxidant efficacy assays and AOCS methods of detecting actives. The optimization of SBT berries oil extraction was performed using statistical design. The optimized SBT berry oil was formulated as microemulsion and nanostructured lipid carrier based gel. Further these formulations were characterized for physicochemical parameters (particle size, rheology, occlusivity and texture analysis), surface morphology (TEM) and photodegradation in comparison with the marketed cream (MT cream) and marketed nanoemulsions (NE). The *in vitro* antioxidant activity of formulations evaluated by radical scavenging assay demonstrated no alteration in the activity of SBT berry oil after incorporation in lipid nanocarriers. The developed nanoformulations also exhibited enhanced photoprotection (> 80 %) for both actives α-tocopherol and β-carotene when evaluated for *in vitro* photodegradation studies in comparison with conventional cream. The *ex vivo* skin deposition in porcine skin at pH 7.4 demonstrated deeper skin targeting (especially in dermis and lower epidermal layers) of nanogels. Nanocarriers showed 1.5 times higher deeper skin targeting in epidermis and dermis in comparison with conventional cream after 48 hr and showed 2.5 times higher permeation after 48 hr than marketed NE. These results were also supported by confocal laser scanning microscopical studies wherein the SBT nanogels showed deeper penetration into porcine skin. The skin irritation potential was evaluated in healthy rabbits revealed no skin irritation on intact skin. This indicates safety of the developed formulations for topical application.





Histopathological observations in rat ear skin

Biography

Amit Mirani has completed his Masters in Pharmaceutics from Bhartiya Vidyapeeth College of pharmacy. Currently he is SRF Research Fellow, Ph.D. Tech.at Institute of Chemical Technology. Amit has been a mentorius student and was awarded gold medal by Vice President of India for 1st Place in Vidharbha in D.Pharm. Amit bagged in a 2nd Prize at Poster Competition at SACACCP. He is an active member of BEST ABLE 2013 team representing VBP group ICT. His interest lies in herbal based formulations.