

Medicinal value of *Lepidium latifolium*:

Lepidium latifolium has many medicinal properties. It is widely used as stomach tonics and diuretics (Navarro *et al.*, 1994). Navarro *et al.* (1994), reported that the aqueous extract of *Lepidium latifolium* leaves improved the urinary excretion among rats. The leaf extract had given in 100 and 50 mg/kg doses through oral route and intraperitoneal respectively. The standard suggested dose for *Lepidium latifolium* for man was 3 to 5 gm/day in the form of tea (Navarro *et al.*, 1994). Some reports also suggested that the perennial pepperweed is also used in the treatment of hypertension and it has a property of anti-hypertensive (Tabassum and Ahmad, 2011). Conde-Rioll *et al.* (2018), determined that the leaf extract of *Lepidium latifolium* showed antitumor activity against HT-29, a cultured human colon cancer cell line.

mitochondrial dehydrogenase inhibition activity of HCC (human hepatocellular carcinoma) cells (Hanschen *et al.*, 2015). *Lepidium latifolium* leaves extracts also comprises many natural antioxidants. These antioxidants act as reducing agents, chelating agents, free radical scavengers and antioxidative defense enzyme systems activator which suppress the ion damages in biological systems (Kaur *et al.*, 2013). *Lepidium latifolium* ethanolic leaf extract also comprises many natural antioxidants which show free radical sifting activity. These compounds are Kaemferol-3-O-robinoside-7-O-(2''''- (E)-feruloyl)-sophoroside, Quercetin-3-O- β -D-sophoroside-7-O- α -L-rhamnoside, Kaempferol-7-O- α -L-rhamnopyranoside and Apetalumoside B6 (Xiang *et al.*, 2018). *Lepidium latifolium* also uses traditionally against kidney related diseases and renal lithiasis (Tabassum and Ahmad, 2011). This plant also show activities against prostatic hyperplasia (Lisciani *et al.*, 1984).

Mechanism of light adaptation in *Lepidium latifolium*: *Lepidium latifolium* plant grows in harsh environment. Temperature is less than -20°C during night which shows its biochemical adaptation. Several studies have been started to connect its low temperature surviving ability with the low temperature regulated genes from the cold desert Ladakh (Aslam *et al.*, 2009). Ahmed *et al.* (2010), demonstrated that seeds of *Lepidium latifolium* had not germinated in dark under saline and non-saline conditions. Whereas, Bhat *et al.* (2016), study revealed that *L. latifolium* has high capability of physiological plasticity which allows it to grow in high altitude area of Ladakh? It comprises light dependent regulation of xanthophyll conversion, responses of antioxidants to environmental stresses and photosynthetic efficiency mechanism for high photosynthetic efficiency. They also found that there is no considerable photoinhibition in *Lepidium latifolium* in the resource limited conditions which suggest its adaptive potential. Francis and Warwick (2007), observed the germination response of *Lepidium latifolium* seeds against light, increasing salinity and reducing water potential. They found that seed germination was highest in light (30% after 14 days) environment and light/dark alternating environments. Seed germination was reduced to 4%

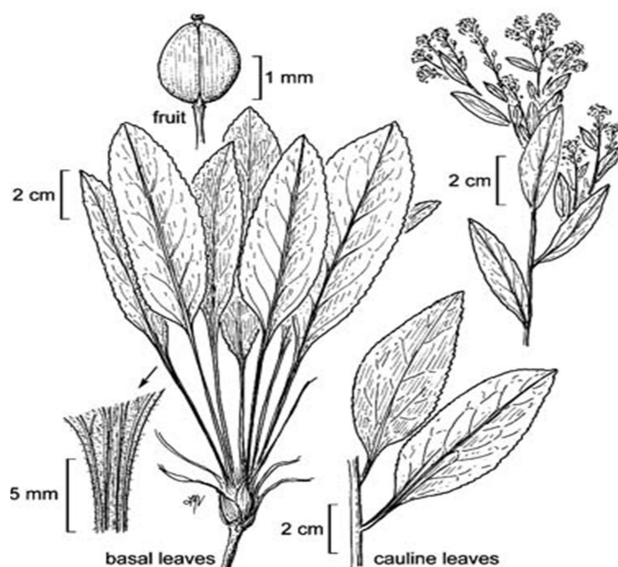


Figure1. *Lepidium latifolium*

This cell line was recognized to then CEPT (1-cyano-2,3-epithiopropene) compound that present in leaf extract. They also found that *Lepidium latifolium* juice also exhibits in vivo high antitumor activity against various cell lines (Conde-Rioll *et al.* 2018). But Hanschen *et al.* results did not find the apoptotic effects of CEPT against human cancer cell lines. However, they suggested that the antitumor activity should be attributed to