mg/mL, MFC- 0.039 mg/mL). Both the extracts exhibited good antimicrobial activity with low range of MIC.

Consideration to all the mentioned facts, the present study was carried out to evaluate the phytochemicals and the bioactivity of extracts from Crataeva religiosa against gram positive and gram negative bacterial strains in vitro.

3.0 PLANT PROFILE: Crataeva religiosa forst f.

Plant Name: Crataeva religiosa  
Family: Capparidaceae  
Systematic Position:

Division : Spermatophyta  
Sub-division: Angiospermae  
Class : Dicotyledoneae  
Sub-class : Polypetalae  
Series : Thalamiflorae  
Order : Parietales  
Family : Capparidaceae

FIGURE: 4 - Crataeva religiosa forst
PLANT: TREE

PLANT: BARK
BARK SAMPLE-POWDER FORM

Trade name:

Three leaved capper include vernacular name like Tamil, Hindi, Maarathi, etc.

Tamil – Maralingam

Hindi – Varuna

Telugu – Ulimiri Chettu

Maarthis – Hadvarna
Malayalam – Nirmadalam

Taxonomy:

The name *Crataeva* is given in the honor of Crataevus, a Greek Botanist, who lived in the time of Hippocrates and the name *religiosa* indicates its growth near the places of worship (Parker, 1999). *Crataeva religiosa* is much branched deciduous tree belonging to the family Capparidaceae, commonly called as Varuna (Williamson, 2002). The trade name given for this tree is three leaved capper (Pullaih, 2006). The leaves are trifoliate, glabrous, and ovate. Flowers are whitish to milky white in colour in terminal dense corymbs (Williamson, 2002). Fruit is berry, globose or some times oblong with woody rind with embedding seeds in the yellow pulp (Parker, 1999). The outer surface of bark is wrinkled and greywhite in colour, covered with large number of lenticells. The tree flowers and fruits from the month of December-May (Yadav and Sardesai, 2002).

Distribution:

*Crataeva religiosa* is globally distributed plant and mostly found in India, Myanmar, Sri Lanka, Malaysia, Indonesia and China. In India, it is found in Peninsular India, Western India, Gangetic Plains, and Eastern India, up to Tripura and Manipur (Williamson, 2002). It is also found in Sikkim and Andaman and Nicobar Islands (Pullaih, 2006). It is found mostly along the bank of the river and streams and near the temple side (Panda, 2004).

Description:

It is a small spreading tree with trifoliate, aromatic leaves when bruised their corymbs being terminal and the flowers are large, white, yellow and purple with 2.5-5.0cm in diameter.
Stamens are purple and indefinite, adnate to base of gynophores, ovary on a slender stalk and the berry being fleshy, globose, 2.5-5.0 cm in diameter and are many-seeded.

Ethnobotany:

The plant part used for the medicinal purpose includes leaves, stem bark and root bark (Nadkarni, 1979 and Anonymous, 1987) and (Bhattachargee, 2001). These parts of Crataeva nurvala are commonly applied to regulate equilibrium among Vata, Pitta and Kapha in Ayurvedic system while the stem bark is used to promote the appetite and to decrease the secretion of the bile in unani medicines (Mhaskar et al., 2000). The bark is used in the urinary disorders including kidney and bladder stones, antiemetic, and calculous affections and as an antidote in snakebite]. Crataeva religiosa is valuable in treating vata (blood flow, waste elimination and breathing), Pitta- (fever and metabolic disorder) and Kapha (joint lubrication, skin moisture, wound healing, strength and vigour, memory loss, heart and lung weakness and weak immune system (Anonymous, 1987). A preparation called 'Varunal' contains Crataeva in combination with Eclipts, Picrorrhiza, Achillea, Cichorium, Solanum, Arjuna, and Cassia seeds which is used against hepatitis, edema, ascites, urinary stones and arthritis (Warrier, 1997). The bark is contraceptive and cytotoxic and useful in kidney bladder stones, fever, vomiting and gastric irritation (Gagandeep and Khadilkar, 2006). Roots and bark are laxative and lithontipic and increase appetite and biliary secretion (Malini et al., 1995). Leaves are used as externally rubifacient and
used in rheumatism. Leaves are given internally febrifuge and tonic (Walial et al., 2007 and Sanayaima et al., 2006).

According to Gurrero, (2009), in Philippines, leaves are useful in irregular menstruation and also in stomachic, whereas the bark is used to cure convulsions and tympanites. Sanyal and Ghose, (2009) speculated that the crushed leaves are applied in the form of paste for swelling of feet and also for a burning -sensation in the soles of feet. The bark and the leaves are pounded and applied in the form of a poultice in rheumatism. The fresh leaves bruised with little vinegar are applied to skin. Bark and roots are rubificient and vesicant. Decoction of bark is used in the disorders of urinary organs and urinary calculi. Roots and bark in the form of decoction are used as calculus affections. Traditionally, the plant is used as oxitoxic, in rheumatic fever, in kidney stones, bladder stone and as tonic (Ghani, 1998). It is useful as anti-pyretic, anti-lithitic, anti-helminthic, and demulcent, in blood and chest diseases (Dury, 1978). NR-AG-I is a polyherbal formulation containing Crataeva religiosa, Dolichos biflorus, Tribulus terrestris and Shilajit. NRAG- II is another herbal formulation containing Crataeva religiosa, Boerrhavia diffusa, Saccharum officinarum and Butea frondosa. Between these two, NR-AG-II is having good diuretic potential than NR-AG-I(Samiulla et al., 2000). A mixture containing Tribulus terrestris fruits (25%); Zinziber officinalis roots(10%); Solanum xanthocarpum whole plant (10%); Asparagus racemosus roots (10%); Tephrosia purpurea leaves (10%) and Crataeva religiosa bark (25%) was prepared and 4 gm of mixture given to patient twice daily with water in urinary disorder (Samy et al., 2008).
Berry like globose fruits of *Crataeva* are edible and are used as astringent (Parker, 1999) and rind of the fruit is used as mordant in dying (Dury, 1978). People living in Kango mix Yurubas leaf paste in water to use it for counter irritant purposes (Irvine, 1961). Quisumbing (1951) reported that fresh leaves of this plant have rubifacient and vasicant properties. According to Corner, (1952), young shoots and fruits of *Crataeva religiosa* are eaten and used in curries. Fruits of this tree are used as spice because of its garlic taste (Seidmann, 2005). In Pallaypatty village of Tamil Nadu, people use the leaves and bark of this tree to cure jaundice, eczema, rabies (Ganesan et al., 2009). The bark of this tree is useful in family planning. The bark is also diuretic (Krishnaraju et al., 2009). The juice of fruit, leaves and bark is applied to cure snakebite, infected wounds and cuts. It increases appetite and controls other skin diseases. The decoction of the bark is useful in the treatment of urinary organs (Sapkota, 2003) and leaves are used as vegetable and the dried leaves are smoked in caries of nasal bones, the smoke being exhaled through the nose in neurologic pains (Dastur, 1962).

**Uses:**

The bark and root are used as medicine, as diuretic and lithotriptic. It is also used in internal inflammations. Ayurveda: Extract of root-bark mixed with honey: in scrofulous enlargement of glands under lower jaw; powdered stem-bark: as appetizer, in renal and urinary troubles, gastrointestinal and urinary affections; Decoction of stem bark compounded with root powder: in gravel; Bark- collyrium: in eye affections; Stem-bark and fresh leaf compound together as rubrifacient, in rheumatic pain; Leaf-juice: in rheumatism.

**Biotechnology:**
Walia et al., (2003), regenerated *Crataeva religiosa* by using seedling derived explants-cotyledonary nodes, epicotyl nodes, hypocotyls segments, first pair of leaves, cotyledons and root segments are used as explants. MS medium supplemented with 0.5mg/L BAP and 0.02mg/L or 0.1mg/L was found suitable for production of multiple shoots and good rooting.

Walia et al., (2007) successfully regenerated the *Crataeva religiosa* by using the nodal region as explants from the 30 year old *Crataeva religiosa*. MS medium containing 2.22 μM of BAP successfully produced multiple shoots which elongated satisfactorily on the same medium.

Sanayaima et al., (2006) investigated the cryopreservation of in vitro grown axillary shoot tips. Auxillary buds from 4 week old in vitro cultures produce shoots on MS medium supplied with 0.1mg/L BAP. The shoots were rooted on MS medium supplied with 0.02mg/L NAA.

Shirin and Maravi, (2006) studied the clonal propagation of *Crataeva religiosa* by using the stem node segments from auxillary branches. MS medium containing 10micro M BA and 15 micro M IAA effectively produces the shoots and rooting the plants.

### 4.0 PLAN OF THE WORK

The specimen of the plant has been collected in the tracts of Nagamalai hills, Arachalur. The collected plant material was authenticated by comparing the available herbarium...