CHAPTER 2

REVIEW OF LITERATURE
2. Review of Literature

Lots of work has been done upon toxicity by taking the mammalian species mice as experimental model. Troupm (1978) and Desouter (1991) studied different pharmacological effect of *M. butayei* in animal and human. The neurotoxicity of *Coscinium fenestratum* stem was studied which is also a medicinal plant used in traditional medicine by Wattanatnom et al., (2006). Karangwa et al., (2007) studied the toxicity induced by the extract of *Magnistipula butayei* in rat. They found effects of a new natural convulsive agent and found that the extract of the plant *Magnistipula butayei* contains a potent toxin, with a powerful neurotoxic activity in rat.

Hyman (1970) observed that *Alstonia scholaris* extract showed molluscicidal potential against freshwater snail *Lymnaea acuminata*. Perry (1980) and woodley (1991) reported that in traditional medicine *A. scholaris* was used as fubrifuge, tonic, for digestion to stimulate appetite, in liver and intestinal trouble, malaria, spleen problem, in diarrhea and dysentery, as antidiabetic, anthelmintic, asthma, lung cancer. Singh and Agarwal (1981) studied the toxicity of certain pesticides to freshwater snail *Lymnaea acuminata*. Gooyal and Varshney (1995) observed on effects of natural products isolated from three species of *Alstonia* on some gram- positive and gram- negative bacteria. The protective effect of *Alstonia scholaris* on hepatotoxin- induced acute liver damage was examined by Lin et al., (1996). Keawpradu et al., (1999) studied on the antiplasmodial activity of extracts and alkaloids of three *Alstonia* species from Thailand and documented that *A. Scholaris* contains some alkaloid compounds that act against malaria like bisindole alkaloids including villalstonine and macrocarpamine which are active against multi drug resistant
K1 strain of *Plasmodium falciparum*. Jagetia and Baliga (2003) reported the induction of developmental toxicity in mice treated with *Alstonia scholaris* (Sapthaparn) in utero. Molluscicidal and anti-cholinesterase activity of *Alstonia scholaris* plant against fresh water snail *Lymnaea acuninate* was investigated by Singh and Singh (2003). Baliga et al. (2004) investigated on the evaluation of the acute toxicity and long term safety of hydroalcoholic extract of Sapthatparna (*Alstonia scholaris*) in mice and rats. Report has found that the plant *A. scholaris* is used as tonic, aphrodisiac, febrifuge, stimulant, expectorant, alterative, carminative, anti-periodic, astringent and stomachic (Singh and Panda, 2005). Anurakkun et al. (2007) studied the α-Glucosidase inhibitors from *Alstonia scholaris*. Arulmozh et al. (2007) experimented on anti-nociceptive and anti-inflammatory activities of *Alstonia scholaris*. Work has also been done upon the screening of *Alstonia scholaris* for wound healing activity (Arumozhin et al., 2007). Molluscicidal potential of *Lantana indica* and *Alstonia scholaris* plants against fresh water snail *Lymnaea acuminate* was worked by Chauhan and Singh (2010). An investigation was conducted on the ethnobotanical and pharmacological study of *Alstonia scholaris* by Pratyush, (2011). Antidiarrhoeal and spasmytic activities of the methanolic crude extract of *Alstonia scholaris* are mediated through calcium channel blockade was studied by Shah et al. (2010).

Dutta, (1964) mentioned that *Thevetia peruviana* is an ornamental plant belongs to the family Apocynaceae and it is an ever green ornamental dicotyledonous shrub that belongs to Apocynaceae family. Enriquez et al. (2002) studied on the acute toxicity of *Thevetia peruviana* in rodents. Flavanone flavanol glycosides from the leaves of *Thevetia*
peruviana and their HIV reverse transcriptase and HIV 1 integrase inhibitory activities was found by TewtrakuiT et al., (2002). Toxicity of Thevetia peruviana extract to adults of Callosobruchus masculatus was studied by Mollah and Islam, (2007) and found that its extracts effectively produced mortality of C. maculates. A study was conducted on the potential of (Oleander) Thevetia peruviana in African agricultural and industrial development from Nigeria by Usman et al, (2009). Thilagavathi et al., (2010) studied on the isolation, Characterization and anti-inflammatory property of Thevetia peruviana. Zibbu & Batra (2011) reported that different parts of the plant also used in toothache, fevers. They also find that it is used in anti rheumatic, decongestant. Singh et al., (2012) mentioned that the different parts of Thevetia peruviana can be used for the treatment of various disorders in human being such as diabetes, liver toxicity, fungal infection, microbial infection, inflammation and to relieve pain.

analgesic activity and acute toxicity study of *Semecarpus anacardium* stem bark extract using mice.

The plants that were found to be toxic during field study in Southern Assam according to traditional knowledge are mentioned below with their medicinal property from literature. Hepatoprotective effects of *Calotropis gigantea* extract against carbon tetrachloride induced liver injury in rats was studied by Lodhi *et al.*, (2009) and reported that *C. gigantea* extract significantly decreased AST, ALT and lipid peroxide levels. Furuta *et al.*, (1986) evaluated Polygonolide, an isocoumarin from *Polygonum hydropiper* possessing anti-inflammatory activity and the structure of polygonolide has been elucidated on the basis of spectroscopic data and confirmed to be 3,4-dimethyl-6-methoxy-8-hydroxyisocoumarin by total synthesis. Harish and Shivanandappa, (2006) investigated the antioxidant activity and hepatoprotective potential of *Phyllanthus niruri* and found that Methanolic and aqueous extract of leaves and fruits of *P. niruri* showed inhibition of membrane lipid peroxidation (LPO) and also shows inhibition of reactive oxygen species (ROS) in vitro. In vivo the antioxidant activity of the extracts were also demonstrable by the inhibition of the carbon tetrachloride (CCl₄) – induced hepatotoxicity in rats and the extract prevent glutamate oxaloacetate transaminase (GOT) and glutamate pyruvate transaminase (GPT). Burns, (2005) used Stramonium in the treatment of Encephalitis. An investigation was made by Ananil, (2000) on Medicinal plants of Togo for antiviral and antimicrobial activities. Edisoff *et al.*, (2006) studied the biodiversity of tropical tuber crops in India. The antimicrobial activity of *Cassia alata* was observed by Makinde *et al.*, (2007) and reported that the aqueous and methanol
extracts of the leaf exhibited more antifungal than antibacterial properties. Saiar and Suchitra, (2009) evaluated the antimicrobial potential of aqueous and solvent extracts of *Solanum xathocarpum* and reported that solvent extracts showed antimicrobial activity against *P. aeruginosa*. A strong inhibition was caused by ethanolic and methanolic extracts of *S. xathocarpum*. A study of was made on *Lantana camara* linn aromatic oil as an antibacterial agent by Pattnaik and Pattnaik, (2010). The study confined on the activity of essential oil on bacterial cells and *in-vivo* study was also done on guinea pigs regarding wound healing activity of Lantana oil. Jambo and Enenebeaku, (2008) carried out the study on antibacterial profile of fermented seed extracts of *Ricinus communis* and reported that *Klebsiella pneumoniae*, *Escherichia coli*, *Proteus vulgaris*, and *Staphylococcus aureus* were highly susceptible to both the methanol and water extracts of the seed while *Pseudomonas aeruginosa* showed reduced susceptibility. *Enterococcus faecalis* on the other hand was resistant to all the preparations tested. An observation was made on some abortifacient plants used by the tribal people of West Bengal by Mitra and Mukharjee, (2009) and reported 22 angiospermic plant species belonging to 21 genera under 81 families which are used as abortifacial. Fareed *et al.*, (2008) studied the antimicrobial activity of some macrophytes from lake Manzalah and found that the extracts of all the four plants showed antimicrobial activity against the used organisms and the efficiency of the extracts varies with the solvent as well as plant species and part used. They also reported that the aqueous extracts showed high effectiveness against all the tested organisms. Shah *et al.*, (2009) studied the antidiarrhoeal and spasmolytic activities of the methanolic crude extract of *Alstonia scholaris*. A survey was made by Choudhury *et al.*, (2008) on ethnobotanical plants in Rjasthan and reported about 57 plant...
species from the various study sites in Rajasthan. Brasileiro et al., (2006) studied the antimicrobial and cytotoxic activities screening of some Brazilian medicinal plants used in Gvernador valadares district and among 33 crude extract studied, thirteen extracts showed antimicrobial activity against Staphylococcus aureus. None extract was found effective against Escherichia coli. Antimicrobial activity of Datura innoxia and Datura stramonium was studied by Eftekhar et al., (2005) and observed that the extracts showed activity against Gram (+) bacteria in a dose dependent manner. Little or no antibacterial activity was found against Escherichia coli and Pseudomonas aeruginosa. Jawate et al., (2010) experimented on the larvicidal activity of Cestrum nocturnum on Aedes Egypti and documented that methanol extract was highly active against the larva showing 100% larval mortality in 24 hours when tested in the concentration of 45 µg/mL (soxhlet) and 25 µg/mL (percolation). A study was made by Nyunai et al., (2006) to measure blood glucose lowering effect of aqueous leaf extract of Ageratum conyzoides in rats and noticed that after oral administration the aqueous extract from leaves of Ageratum conyzoides showed a significant reduction of blood glucose level. Antimicrobial activity of Solanum torvum Swart. against important seed born pathogens of paddy was studied by Lalitha et al., (2010) and found that aqueous extracts of leaves (at 25% concentration) showed inhibition of the test against pathogens. Highly significant antifungal activity was observed in methanolic and ethanolic extract and zone of inhibition was 18 and 30mm in Methanol and ethanol extract. Chatton, (2004) reported the medicinal uses of tobacco in history. Wang et al., (2008) studied the effects of essential oil from Croton tiglium L. on intestinal transit on mice and concluded that oil from C. tiglium might modulate gastrointestinal motility and induce intestinal inflammation related to immunological