7. SUMMARY
Mebarid, Enterocin, Kutajarishta and black pepper produced antidiarrhoeal effect in castor oil induced diarrhoea model and magnesium sulphate induced diarrhoea model indicating their antisecretory effects and enhancing the water and electrolyte absorption in gastrointestinal tract. Increase in the motility and intraluminal fluid accumulation are the major causes of diarrhoea (Thapar et al., 2004). Mebarid, Enterocin, Kutajarishta and black pepper has decreased the enhanced motility and increased intraluminal fluid accumulation induced by castor oil.

Pharmacologically, inhibition of experimental diarrhoea and reduction in fecal output by a substance are the basis for the evaluation of a potential anti diarrhoeal agent (Akah et al., 1999). Experimental models used for the study of antidiarrhoeal activity of herbal formulations can be included in its biostandardisation due to the simplicity and ease of methods used and reproducibility of the results.

Potassium channels, nitric oxide pathway and α₂ adrenergic receptors play an important role in the diarrhoea (Akindele et al., 2006, Flavia et al., 1999, Tripathi, 1999). Glibenclamide (potassium channel blocker), Isosorbide dinitrite (nitric oxide donor) has reduced the antidiarrhoeal activity of Mebarid, Enterocin, Kutajarishta and black pepper while antidiarrhoeal activity of Mebarid, Enterocin, Kutajarishta and black pepper was not influenced by Yohimbine (α₂ adrenergic receptor blocker). The results indicated that Mebarid, Enterocin, Kutajarishta and black pepper produced the antidiarrhoeal effect through potassium channels and nitric oxide pathway while no effect was seen on α₂ adrenergic receptors.

Gut function is controlled by both the enteric (intestinal) nervous system and central nervous system (Afroz et al., 2006). Gastrointestinal motor tone is regulated through multiple physiological mediators by acting on muscarinic receptors, ganglionic receptors, histamine receptors and calcium channels (Malik et al., 2010, Jing et al., 2009, Attia et al., 2004). Mebarid, Enterocin, Kutajarishta and black pepper produced the relaxation of guinea pig ileum. Relaxation of guinea pig ileum by Mebarid may be produced by blocking of muscarinic, ganglionic, and histamine receptors as well as blocking of calcium channels. Relaxation of guinea pig ileum by Enterocin may be produced by blocking of ganglionic, and histamine receptors as well as blocking of calcium channels but not the muscarinic blocking. Relaxation of guinea pig ileum by Kutajarishta may be produced by blocking of histamine receptors and calcium channels but not the muscarinic and
ganglionic blocking. Muscarinic, ganglionic and histamine block as well as calcium channels blocking effect is not likely a possible mechanism of action of black pepper in relaxation of guinea pig ileum. Accordingly, a direct non specific mechanism of action could be suggested for black pepper.

Administration of black pepper with Mebarid, Enterocin, and Kutajarishta produced the increase in the antidiarrhoeal effect of Mebarid, Enterocin, and Kutajarishta in castor oil and magnesium sulphate induced diarrhoea in mice. Black pepper enhanced the antimitility effect of Mebarid, Enterocin, and Kutajarishta in mice. Inhibitory effect of Mebarid, Enterocin, and Kutajarishta on intraluminal fluid accumulation induced by castor oil in mice was increased by black Pepper.

Among the numerous phytochemicals such as alkaloids, tannins, flavonoids and terpenoids present in the medicinal plants, tannins and flavonoids may be responsible for antidiarrhoeal activity by increasing the colonic water and electrolyte reabsorption. Others act by inhibiting intestinal motility (Palambo, 2006). Antidiarrhoeal effect of Mebarid, Enterocin, Kutajarishta and black pepper may be due to presence of different primary and secondary metabolites (phytochemicals) such as presence of alkaloids, tannins, sugars, flavonoids and terpenoids in Mebarid and Enterocin and presence of alkaloids and sugars in Kutajarishta and black pepper.

Different analytical methods confirmed the presence of piperine in the black pepper. Antidiarrhoeal effect of piperine showed that it is the active constituent responsible for the antidiarrhoeal activity of black pepper.