Ashokarishta Syrup, Chandraprabha Vati, Sitopaladi Churna, and Punarnavadi Mandoor are ayurvedic medicines which have been used to cure number of ailments and currently manufactured by more than hundreds of companies. In our study, we selected 4 brands of each medicine. For Ashokarishta, we chose Baidyanath, Dabur, Dhanwantari, and Prabhat. These Ayurvedic formulations are used to treat various diseases such as fever, heavy periods, pain menstruation, bleeding disorders like bleeding hemorrhoids, nasal bleeding, inflammation, lack of taste and indigestion. Chandraprabha Vati samples were chosen from Baidyanath, Dabur, Dhanwantari, and Zandu. These are also used for the treatment of urination problem, urinary tract infection, constipation, urinary calculi, abdominal colic pain, bloating, cold, low back pain, rhinitis, cough, asthma, bronchitis and another respiratory diseases, dermatitis, eczema, allergic skin conditions and pruritis, liver, piles, spleen diseases, fistula and anemia, to cure eye infections, caries, treatment of semen defect and gynaecological difficulties. Respiratory disorders can be easily & effectively cured by the ayurvedic herbal Sitopaladi churna as powder formulation. Similarly, Punarnava Mandoor is used in the treatment of Anemia, splenomegalay, fever, piles etc.

**Physicochemical Properties**

Our study showed that Ashokarishta syrup of all brands had specific gravity in range. Dhanwantari brand sample pH was out of range while all brands contained total solid contents less than mentioned. Alcohol values in range for all brands of Ashokarishta syrup. Kumar et al have standardized different brands of Ashokarishta formulation. They observed that maximum total alcohol content was found in Baidhyanath ashokarishta whereas minimum total alcohol content in Dabur ashokarishta. pH for different formulations were 3.93 (Dabur ashokarishta), 3.72 (Sandu ashokarishta), 4.13 (Baidhyanath ashokarishta) and 3.92 (in-house formulation). A variation in extractive value was observed in Water- and alcohol-soluble extract of the marketed brands and in-house formulation of Ashokarishta. A total of maximum solid content observed in Baidhyanath ashokarishta (21.76) whereas minimum total solid content was observed in Dabur ashokarishta (15.39).82

Different brands of Ashokarishta were evaluated for the quality assessment by Mishra et al. it was found that the specific gravity and total solid content was within the range where as a
sample leave 4.755% solid content, these shows a significant variation from the standard or reference value i.e. 5-11%. In case of alcohol content sample A001 have 12.46% and sample A002 have 3.96%. The normal specified range of alcohol content is 5-11%. Our Ashokarishta preparations show a significant variation in this value from the standard range which would affects the efficacy of preparation.83

For Chandraprabha Vati, only Baidyanath and Dabur brands could pass the total ash content and iron assay while none of the brands could pass acid insoluble ash assay. Quality & purity standards for Chandraprabha vati were established by Weerasekera et al in which determination of sensory characteristics, physicochemical parameter, TLC fingerprinting profile & qualitative screening were carried out. The authors found no foreign matter due to careful manual selection of ingredients. Physio-chemical parameters indicated that it has little high acid insoluble ash that may be due to certain metal and mineral preparations added in this formulation and may be stuck with little sand particles. pH value is slightly towards acidic probably due to the addition of bicarbonate which produce carbonic acid in aqueous medium. Water soluble extractable are considerably high (46.9 w/w) is an indicating more water soluble constituents in Chandraprabha vati.84

Safiullah et al prepared and characterized formulations of Chandraprabha Vati. During the elemental analysis of the same Fe, Cl, Ca, Na, K, & Al was observed in major amount i.e >1 and Mg, S, P were in minor amount i.e <1. In this study, presences of different size of particles are also observed. These all observations greatly affects the efficacy of the preparation.85 In our study, for Sitopaladi Churna, Dhanvantari brand could not pass loss on drying (LOD) test at 110°C. In case of ash value, only Dabur and Zandu could pass the test. All brands passed acid insoluble tests while all the brands failed alcohol soluble extractive value test. For Punarnavadi Mandoor, ash and acid insoluble ash tests were passed by all brands while Zandu brand failed in iron assay examination. Makhija et al performed Physico-chemical standardization of Sitopaladi churna for two brands and observed that all the properties were normal in range.86 Surisetty et al standardized a polyherbal formulation available in the market called as Surya Sakthi Churna used to treat many ailments of the body and found that all the physicochemical properties were within range.87
DISCUSSION

Detection of Microbes in Formulations

The present study showed that all the marketed herbal formulations of Ashokarishta syrup, Chandraprabha vati, Sitopaladi churna, and Punarnavadi mandoor were free from bacterial and fungal contamination (E. coli, S. aureus, P. aeruginosa and Salmonella) which was in concordance with Kumar et al.

Alcohol content

Our study showed that ethanol content was minimum in Dabur while it was highest in Baidyanath. However, all the brands contained ethanol content test for Ashokarishta. Kumar et al and Mishra et al also reports different brands of Ashokarishta contained alcohol levels which were in range as pre-defined.

Heavy Metals, Pesticide Residues & Radioactive Substances in Herbal formulations

Our study showed that lead, arsenic and cadmium were not detected in all formulations of Ashokarishta while mercury was found in all brand formulations under permissible limits. The limit was in concordance with previous studies (Kumar et al, Mishra et al). Lead was not detected in all brands of Sitopaladi Churna, while arsenic and cadmium was detected in Kashmir brand. Mercury was detected in Dhanwantari and Kashmir brands. For Chandraprabha Vati, lead, arsenic, cadmium and mercury was observed in all brands except cadmium which was not detected in Baidyanath. The detected amount was under permissible limits. For Punarnavadi Mandoor, arsenic and cadmium was not detected in Dabur brand while arsenic alone was not detected in Unjha brand. While all other heavy metals were detected in all other brands. The detected amount was under permissible limit in all the brands.

Pesticide residue & radioactive substances were not detected in all the formulations.

Anti-inflammatory potential

All the formulations were shown potent anti-inflammatory activity. Anti-inflammatory effect of these formulations may be due to crude drugs which are used to prepare these formulations. Haldi & daru haldi have well known significant anti-inflammatory & these two are the main ingredients of ashokarishta.