SUMMARY

This PhD study is on the Ayurvedic concept of *Abhāva Pratinidhi Dravya* (APD). Ayurveda permit substitution of unavailable herbs (*Abhāva Dravya* - AD) by selected herbs (*Abhāva Pratinidhi Dravya* - APD). Classical Ayurvedic texts of 14th -19th Century CE indicate APDs for several ADs, do not provide a logic for the selection of an APD. A scientific research on APD concept can contribute to legitimize APDs, which can protect the endangered species from further exploitation. This PhD study provides a referenced list of APDs for 156 ADs compiled from Ayurvedic literature and a logical basis for selection of APDs by analysis 20 among them. Legitimacy of substitution of 2 pairs also has been demonstrated through appropriate scientific studies.

The overall objectives of this study were to compile a list of ADs and APDs from Ayurvedic texts and tradition and to study the functional similarity between selected pairs of AD and APDs through a trans-disciplinary research (TDR) involving Ayurveda, phytochemistry and pharmacology studies. Enhancing the awareness about legitimate substitution among Ayurveda practitioners was also an objective.

Through this PhD work, a referenced list of AD-APDs has been compiled. A list of APDs for 156 ADs, including 123 plant drugs, 19 metals and minerals, 12 animal products and 2 processed drugs was obtained.

Ayurvedic analysis of the prioritized 20 AD-APD pairs has shown that in 85% of the pairs, the *panchamahābhūta*, *rasapanchaka* and *doṣakarma* were similar between ADs & APDs. In
70% pairs *dhātukarma* was similar and in 50 % the therapeutic indications and useful parts were similar.

Tubers of the AD, *Ativiṣā* (*Aconitum heterophyllum* Wall. ex. Royle) and rhizomes of the APD, *Mustā* (*Cyperus rotundus* L.) and fruits of the AD, *Dāḍima* (*Punica granatum* L.) and the APD, *Vṛksāmla* (*Garcinia indica* Choisy.) were studied for their phytochemical and pharmacological similarities.

*Mustā*, a tropical, marshy weed is the APD for *Ativiṣā*, which is a rare and expensive Himalayan herb. They have similar Ayurvedic profile and similar groups of phytoconstituents. But *Ativiṣā* has higher concentration alkaloids. The HPTLC of their successive extracts showed several common bands at Rf values and HPLC fingerprints of aqueous extracts showed common peaks at retention times. Crude powders of *Ativiṣā* (400 mg/kg) and *C. rotundus* (800 mg/kg) were found to have statistically significant *medohara* (antihyperlipidemic), *atisāraghna* (antidiarrhoeal) and *jwarahara* (antipyretic) activities compared to the respective controls (P<0.05), in Wistar albino rat models. This supports the legitimate substitution of *Ativiṣā* by *Mustā* for at least studied disorders.

Fruits of *Dāḍima* and *Vṛksāmla* have similar Ayurvedic profile. They possess glycosides, phytosterols, phenolic substances and flavonoids. Both of them showed a significant increase in iron dialysability in cell free model. Enhancement in iron bio-availability was also reflected by an increase in ferritin in Caco2 HepG2 cells, which can be equated to *agni dipana* action mentioned in Ayurvedic books.

The Ayurveda, phytochemistry and pharmacology analysis of 2 pairs showed that, APDs can legitimately substitute respective ADs. The Trans-disciplinary research model showed in this work could be followed to study other AD-APD pairs and search new APDs suitable to contemporary requirements.