**Objectives of present work**

The growing number of various dietary supplements and fortified food products requires reliable quality control to insure the protection of consumers. However the official analytical methods of antioxidant and CAP in most cases are based on outdated procedures, which are complicated, time-consuming, inaccurate and do not allow the simultaneous determination of these analytes. For these reasons there is increasing need for the development of well validated, accurate, time-saving, low cost, modern, multicomponent methods.

In the light of the aforementioned, the aims of this study can be summarised under two sections:-

**a)** For Antioxidant (BHA,BHT,TBHQ)

i. Development of modern analytical methods, which allow the simultaneous, fast, routine determination of antioxidant (used as food additives).

ii. Development of a sample preparation procedure for the simultaneous extraction of antioxidant.

iii. Application of the developed methods on the most significant, commercially available antioxidant enriched food products.

iv. Development and comparison of different chromatographic parameter (e.g.- column attributes, mobile phase composition, temperature, flow rate, injection volume, optimisation of separation etc.)

v. Development and comparison of different mass spectrometric parameter for evaluation of food products.

vi. Development of analytical methods for simultaneous analysis of antioxidants, which allow the determination of each antioxidants concentration in the food samples.

vii. Validation of developed methods as per ICH guideline on following topic:

   - Specificity & selectivity
   - Linearity and range
   - Limit of Detection/Limit of Quantitation
   - Recovery (Accuracy)
   - Repeatability (Precision)
   - Reproducibility
Ruggedness

b) For veterinary Drug (Chloramphenicol)

i. Development of modern analytical methods, which allow the simultaneous, fast, routine determination of Chloramphenicol (veterinary uses in all major food-producing animals) in animal origin based food and food product.


iii. Application of the developed methods on the most significant analytical analysis tool for screening and conformation of veterinary drugs in contaminated food products.

iv. Development and comparison of different chromatographic parameter (e.g.- column attributes, mobile phase composition, temperature, flow rate, injection volume, optimisation of separation etc.)

v. Development of different mass spectrometric parameter for evaluation of food products.

vi. Development of analytical methods for analysis of chloramphenicol, which allow the determination of concentration in different in food samples of animal originated.

vii. Validation of developed method as per Commission Decision (EC) No. 657/02 (2002/657/EC) on following points:
- Specificity & selectivity
- Linearity and range
- Decision limit ($CC_{\alpha}$)/Detection capability ($CC_{\beta}$)
- Recovery (Accuracy)
- Repeatability (Precision)
- Reproducibility
- Ruggedness