pregnant and postpartum women, as well as for children of 6–24 months of age (Baker et al., 2010), other subpopulations may also need iron supplementation to improve their haemoglobin (Hb) level.

A research group has observed that the Recommended Dietary Allowance (RDA) of 18 mg/day of iron for women was not easily reached even when the volunteers consumed 5 portions of red meat and 2 portions of poultry/week (Navas et al., 2008).

Reliable information on the nutrient composition of foods, such as their iron content, is essential to meet the needs of a wide variety of groups, including nutritionist, government agencies, health and agriculture professionals, policy makers and planners, food producers, retailers and consumers. Malnutrition arising from dietary deficiency of critically important mineral micronutrients such as iron is a serious problem affecting nearly half of the world's population (Shobana et al., 2013).

Several studies based upon the comparison of data from different food composition tables have suggested that significant changes in the mineral content of food have occurred over time, with iron contents declining in recent years, mostly due to changes in agriculture practices, particularly depletion in available soil minerals. Iron deficiency even in absence of anaemia, can cause fatigue and reduce work performance (Zimmermann et al., 2010).

There is no repository that allows for the direct comparison of the nutrient content of similar foods from different eras by contemporary analysis. However, one can at least address the issue of whether the values given for the iron content of plant-based foods, in the current UK version of 'The Composition of Foods', is matched by data from re-analysis of the same foods, more than 20 years later.

In this pretext, keeping in mind the importance of iron for our body, the present study was intended to analyse the iron content of some of the food items that are consumed more frequently nowadays. Dark chocolate, Ramdana, Pasta, Maggie, Biscuit and Cornflakes were selected for the present study as children love to eat them.

Materials and Method :

Materials required: Iron III chloride, 0.1M Potassium Thiocyanate (KSCN),

Food items- Dark chocolate, Ramdana, Pasta, Maggie, Biscuit, Cornflakes

Preparation of standard solution:

- Stock solution was prepared by dissolving 1.70 g of Iron chloride (hexahydrate) in 99 ml of distilled water.
- A serial dilution of the stock solution was prepared up to 10 folds.
- In test tubes, 5 ml of each of the serially diluted concentrations were taken separately, to which 5ml of 0.1 KSCN solution was added and mixed well.
- The absorbance of the mixture was measured at 450 nm and a standard iron curve was prepared from the data obtained.

Testing of food items for their iron content:

Ashing of the sample: The selected food items were finally powdered with the help of mortar and pestle. 2 g of each of the food items was heated strongly in an evaporating dish. This step was carried out in a well-ventilated room. The heating time varied depending on the rate at which the sample burned to ash. The samples were heated till a greyish ash was obtained. After the samples were cooled, they were transferred to a small beaker of

100 ml capacity and the iron (III) in the ash was dissolved in 5ml of distilled water. The ash solution was stirred using a glass stirring rod for about 5 min and then filtered.

Analysis of the samples: 5 ml of the filtered sample was transferred to a test-tube and then 5 ml of 0.1M KSCN was added. The mixture was stirred by swirling the test tube. The absorbance was measured at 450 nm without delay as the colour of the solution faded within 15-20 min. The solution concentration was halved by adding 5 ml of KSCN and therefore, the concentration values were multiplied by 2 during the calculations.

A mixture of 5 ml of distilled water and 5ml of KSCN solution was used as the blank. The absorbance values were measured for all the samples.

These values were compared with standard iron curve to estimate the iron content in the selected food item.

Results and Discussion :

Collection of food items: The food items that included Dark chocholate, Ramdana, Pasta, Maggie, Biscuit, Cornflakes were collected from local market and were finely powdered as shown in Figure 1.

Fig. 1. Food samples: (a) Dark chocolate; (b) Ramdana; (c) Pasta; (d) Maggie; (e) Biscuit; (f) Cornflakes

Ashing of the samples: The ashes of food items selected for the present study were prepared as described in the previous section. 2 g of each of the food items was heated strongly in an evaporating dish. The samples were heated till a greyish ash was observed and then they were powdered using a mortar and pestle.

Analysis of the samples: The samples were cooled, mixed with 5ml of distilled water, stirred using a glass stirring rod for about 5 min and then filtered.

5 ml of each of the filtered samples and mixed with 5 ml of 0.1M KSCN were taken separately in a test tubes and mixed well. Colour of the resultant solution of the selected food items was as follows: Dark chocolate-maroon; Maggie-dark brown; Pasta-lemon tea colour; Cornflakes-coffee colour and Ramdana-mustard yellow (Figure 2).

The absorbance values were measured for all the samples. A mixture of 5 ml of distilled water and 5ml of KSCN solution was used as the blank.

Fig. 2. Prepared food samples for analysis of iron content.

The spectrophotometric readings at 450 nm for Dark chocolate, Maggie and Biscuit, was 2.986 and that of Pasta was 2.958. The absorbance of Cornflakes was 1.989 and that of Ramdana was 1.200. The data are presented in Figure 3.

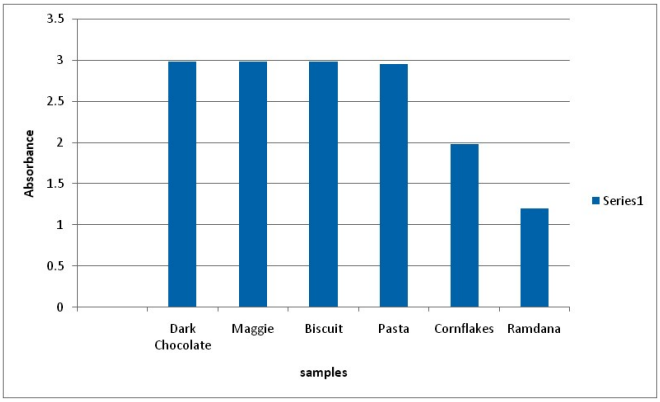

Fig. 3. Absorbance at 450 nm for the selected food items

By comparing the spectrophotometric readings of the selected food items with that of the standard iron curve, it was observed that maximum iron content was found in Dark chocolate, Maggie and Biscuit which was (0.074mg) followed by Pasta (0.073 mg), Cornflakes (0.048 mg) and Ramdana (0.026 mg). The data are presented in Figure 4.

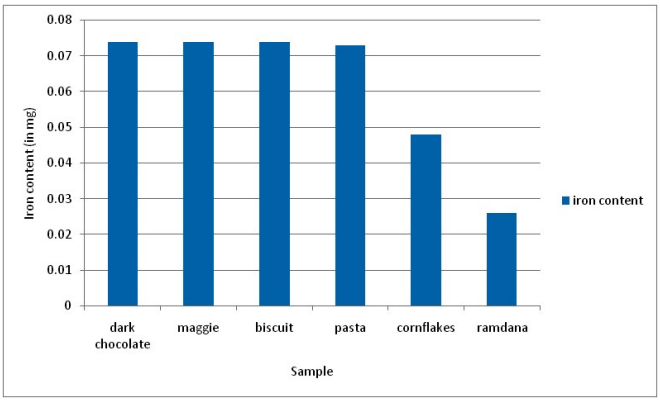

Fig. 4. Iron content(in mg) of selected food items

The value of iron content of the selected food items was multiplied by 50 to obtain iron content per 100 g. These were compared with the iron content of some of the common food items consumed in day to day life (obtained from internet). The comparison is presented in Table 1.

Table 1. Comparison of iron content of selected food items with some common food items

Sl. No.	Sample	Compared sample
1.	Dark chocolate (3.7Fe mg/100g)	Egg plant (0.316Fe mg/100g)
2.	Maggie (3.7Fe mg/100g)	Red tomato (0.293Fe mg/100g)
3.	Biscuit (3.7Fe mg/100g)	Spinach (0.297Fe mg/100g)
4.	Pasta (3.65Fe mg/100g)	Summersquash (0.819Fe mg/100g)
5.	Cornflakes (2.4Fe mg/100g)	Cabbage (0.704Fe mg /100g)
6.	Ramdana (1.3 Fe mg/100g)	Soya sauce (1.381Fe mg/100g)

From above comparison, it was inferred that Dark chocolate, Maggie, biscuit, pasta and cornflakes contained more iron than summer squash, cabbage and soya sauce. It is good news for the children and adults as they can happily consume these items without feeling guilty.

References :

Abbaspour N et al (2014). Review on iron and its importance for human health. *J. Res Med Sci.*, 19(2):164-174.

Baker RD, Greer FR. (2010). Diagnosis and prevention of iron deficiency and iron-deficiency anemia in infants and young children (0-3 years of age). *Pediatrics*,126:1040-50.

Bothwell, T.H., R.W. Charlton, J.D. Cook, and C.A. Finch.(1979). Iron metabolism in man Blackwell scientific publication, Oxford. p.576.

Halterman JS, Kaczorowski JM, Aligne CA, Auinger P, Szilagyi PG. (2001). Iron deficiency and cognitive achievement among school-aged children and adolescents in the United States. *Pediatrics,*107:1381-6.

Navas CS et al (2008). Oily fish increases iron Bioavailability of a phytate rich meal in young iron deficient women. 27:96–101.

Shobhana VG, Senthil N, Kalpana K, et al (2013). Comparative studies on the iron and Zinc contents estimation using atomic absorption spectrophotometer and grain staining Techniques (Prussian blue and dtz) in maize germplasms. *Journal of Plant Nutrition.* 36:329

Zimmermann MB, Chassard C, Rohner F, et al. (2010). The effects of iron fortification on the gut microbiota in African children: a randomized controlled trial in Cote d'Ivoire. Am J Clin Nutr., 92:1406–1415.