Fatty Acid Profile of Fenugreek Seed and Galactomannan Depleted Fenugreek Residue*

R. Yasothis, M.R. Purushothaman, K. Mani and Karu Pasupathi
Department of Animal Nutrition, Veterinary College and Research Institute, Namakkal 637 002, Tamilnadu, India.

(Received: 06-03-2014; Accepted: 05-04-2014)

Abstract
A study was carried out to evaluate the fatty acid profile of fenugreek seed and galactomannan depleted fenugreek residue. Six samples in each of fenugreek seed and galactomannan depleted fenugreek residue were collected and analysed for fatty acid composition. The fatty acids content of galactomannan depleted fenugreek residue was comparable with fenugreek seed. It was concluded that the galactomannan depleted fenugreek residue can be used in livestock and poultry ration.

Key words: Fatty acid profile, Fenugreek seed, Galactomannan depleted fenugreek residue.

Galactomannan in fenugreek, due to its viscous property, is effective in inhibiting the intestinal glucose uptake and lower the blood glucose (Srichamroen et al., 2009). Hence separation of galactomannan in fenugreek is undertaken at industrial level to produce anti-diabetic nutraceutical. The residue is designated as Galactomannan Depleted Fenugreek Residue (GDFR) and marketed as Parry Fenumax. There is limited evidence on the use of fenugreek seed in poultry ration and the use of galactomannan depleted fenugreek residue as feed ingredient for poultry is lacking. This study was therefore carried out to evaluate the composition of fenugreek seed and galactomannan depleted fenugreek residue.

Materials and Methods
Six samples in each of fenugreek seed (FS) and Galactomannan Depleted Fenugreek Residue (GDFR) were collected and used for fatty acid analysis. The FS samples were collected from different areas of Tamilnadu while the samples of GDFR (Parry Fenumax) received from E.I.D. Parry (India) Limited, Parry Nutraceuticals Division, Chennai, Tamilnadu were used for analysis.

Total lipids were extracted according to the method described by Folch et al. (1957). For the analysis of fatty acid composition, an aliquot (10 mg) of the liquid was transmethylated according to Sukhija and Palmquist (1988). The fatty acid methyl esters (FAME) were analyzed in a gas-liquid chromatography (CERES 800 plus, Chemito, India), equipped with a flame-ionisation detector. Fatty acids were identified by comparison of their retention times with those of known standards (Supelco, USA) and the fatty acids were expressed as percentage of total fatty acids and converted into g/100g sample. The data collected were statistically analysed as per the method of Snedecor and Cochran (1989).

Results and Discussion
The fatty acids composition (g/100 g sample) of FS and GDFR were 0.57 ± 0.04 and 0.99 ± 0.09 palmitic, 0.64 ± 0.04 and 0.98 ± 0.05 stearic, 2.43 ± 0.15 and 3.78 ± 0.17 oleic, 1.59 ± 0.09 and 2.92 ± 0.10 linoleic, 0.04 ± 0.01 and 0.07 ± 0.01 linolenic and 0.03 ± 0.01 and 0.05 ± 0.01 arachidic acids, 0.22 ± 0.07 and 0.13 ± 0.04 other fatty acids respectively.

The fenugreek seed samples in this study had similar level of palmitic acid, higher stearic and oleic acids and lower linoleic, linolenic and arachidic acids than observed by earlier workers (Ziwar, 2010; Ciftci et al., 2011 and Ali et al., 2012).
In GDFR, the palmitic, stearic and oleic acid contents were higher and linoleic, linolenic and arachidic acid contents were lower as evidenced by the results obtained in comparison to literature values (Anonymous, 2010).

The fatty acids evaluated in FS and GDFR oils were different from the earlier studies (Anonymous, loc. cit; Ziwara, loc. cit; Ciftci et al., loc. cit and Ali et al., loc. cit) which might be due to the genetic factors and environmental conditions during fruit development and maturity (Ali et al., loc. cit), place and conditions of cultivation of plant (Baccou et al., 1978). Hilditch and Williams (1964) recorded that the temperature and atmosphere were the principal factors accounting for variations in fatty acids, especially in linolenic acid.

It was concluded that due to its fatty acid profile galactomannan depleted fenugreek residue can be used in livestock and poultry ration.

References