Soybean (Glycine max) originated in Eastern Asia probably in north and Central China, is one of the most important legume and oilseed in the world because of its high nutritive value. It is a good source of nutrients as it contains around 40% of high quality protein, 20% oil rich in fatty acids devoid of cholesterol also contains tremendous amount of calcium, iron and vitamins such as niacin, thiamin and riboflavin. Soybean contains phytochemicals also have antioxidant property which reduces risk of atherosclerosis. Protein in soybean have high digestibility and is a complete protein as it contain all essential amino acids. Therefore acts as a healthful functional food.

Different genotypes of soybean such as Green, Black and yellow (classified on color of seed coat and characteristics) are cultivated extensively. Green soybean is rich in phytochemicals beneficial to human being and is therefore considered as nutraceutical and functional food crop. Black soybean another genotype of soybean is rich in antioxidants and has been used as a health food and herb in China for hundreds of years. Researchers from Korea considered that seed coat of Black soybean was a good source of anthocyanin pigment and also referred it as medicinal soybean. Consumption of Black soybean reduces the risk of cancer and heart diseases. Yellow soybean is widely grown in India and is commercially exploited for oil production.

The present work was undertaken to evaluate the physicochemical composition of soybean cultivars grown in Maharashtra region.

**MATERIAL AND METHODS**

**Sampling:** Different genotypes of soybean viz green (MAUS-609), black (MAUS-504) and yellow (MAUS-71) were obtained from All India Coordinated Research Project on soybean, Vasantrao Naik Marathwada Krishi Vidyapeeth Parbhani. For compositional analysis selected cultivars of soybean were cleaned, sorted and flour was prepared.

**Physical analysis:** Physical properties of the selected varieties such as color was determined visually, 1000 seed weight by measuring weight of 1000 seeds. Bulk density determined by measuring mass and volume, true density by measuring increase in volume by predetermined weight of sample by toluene displacement and porosity of the selected varieties was calculated by using obtained value of bulk density and true density of the respective varieties.

**Proximate analysis:** Biochemical components such as carbohydrate, protein, oil (fat), ash and crude fiber content affects the nutritional issue and are considered to be important. Hence, proximate analysis was carried out on green, black and yellow soybean. Flours of soybean of respective varieties were analysed for
moisture, Crude fat, crude protein, ash and crude fiber by methods described in AOAC\(^\text{5}\). Carbohydrate content of the soybean cultivars was determined by difference method. By using following formula

\[
\% \text{Carbohydrate} = 100 - [\% \text{Moisture} + \% \text{Protein} + \% \text{Fat} + \% \text{Ash} + \% \text{Crude fiber}]
\]

All the experiments were carried out in triplicates and data obtained were analysed statistically using analysis of variance and differences were assessed for significance of \(p<0.05\) level\(^6\).

**RESULTS AND DISCUSSION**

**Physical analysis:** Analysis of genotypes revealed a significant difference among the parameters examined. It indicates a variation in 1000 seed weight such that weight of black seeds (MAUS-504) was the lowest 80.78 and it found to be highest for yellow variety (MAUS-71) 105.64 which reveals that the seeds of black variety was having less mass and size as compared to other two varieties. Also bulk density of all the three genotypes were comparable to each other in range of 0.70 to 0.74, which indicates that if these seeds are to be packed then space required for their packaging, will be same. The value of true density was highest for green genotype (MAUS-609) with highest porosity of 42.85

**Proximate analysis:** These cultivars had safe level of moisture for storage between 6 to 8. The carbohydrate content of green (MAUS-609) genotype was found to 36.54% while in yellow (MAUS-71) and black (MAUS-504) it was 33.89 and 30.95% respectively. Higher carbohydrate content indicates higher calories it provides heat and energy for all metabolic activities of body. Earlier workers reported that deficiency of carbohydrate can cause the body to divert proteins and body fat to produce needed energy, thus leading depletion of protein and fat from body tissues\(^7\). Crude fiber content of all varieties was comparable between 2-3.2. Though crude fiber does not contribute nutrients to the body, it adds bulk to food thus facilitating bowel movements (peristalsis) and preventing many gastrointestinal diseases in man as reported\(^\text{7}\).

Protein was more in black variety (MAUS-504) about 35.02% while in green and yellow it variety was same. Yellow variety (MAUS-72) revealed high oil content of 20.76% which was higher than other two varieties so that this variety can be exploited commercially for oil extraction. Other two varieties have oil content between 16 to 19%. Similar composition for black variety was reported\(^8\). For green variety some workers reviewed similar proximate composition\(^\text{9}\). Black soybean (MAUS-504) variety was found to be superior as compared to that of Green(MAUS-609) and yellow variety (MAUS-71).

**REFERENCES**