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SENSORY CHARACTERISTICS AND NUTRIENT COMPOSITION OF *CHURAN* PREPARED BY USING SEED POWDER OF DATE FRUIT (PHOENIX DACTYLIFERA)

VINITA[1] & DARSHAN PUNIA[2]

[1]Research Scholar, Department of Foods and Nutrition, CCS Haryana Agriculture University, Hisar, Haryana, India

[2]Senior Scientist, Department of Foods and Nutrition, CCS Haryana Agriculture University, Hisar, Haryana, India

ABSTRACT

The present study was conducted to evaluate the suitability of date seed powder for preparation of *churan* and to studysensory characteristics and nutrient composition. The powder of seeds obtained from four varieties of date fruit, namely Hillawi, Khadrawi, Medjool and Shamran were used for preparation of*churan*.Three types of *churan* were prepared: Type-I *churan* was prepared by using 5% seed powder, Type-II by 10% seed powder and Type-III by using 15% seed powder. It was observed that *churan* prepared from seed powder of all the varieties were acceptable in terms of all the sensory characteristics, however the scores were higher in Type-I *churan* as compared to Type-IIand Type-III *churan*.Thefindings of the study showed that *churan* prepared from seed powder of khadrawi variety was highly acceptable. The nutrient composition revealed that there was a non-significant ($P \leq 0.05$) difference in the crude protein and fat content of *churan* prepared using seed powder of all the varieties of date fruit.Crude fiber content was highest in *churan* of Khadrawi variety (9.75%) followed by *churan* of Hillawi variety (9.27%), *churan* of Shamran variety (8.71%), *churan* of Medjool variety (8.23%) and control *churan* (7.04%). There was non-significant ($P \leq 0.05$) difference observed in the ash content of the *churan* prepared using seed powder of different varieties of date fruit.

KEYWORDS: Sensory **C**haracteristics, Nutrient Composition, Date Seed Powder, *Churan*

INTRODUCTION

Date palm is an important and one of the oldest trees cultivated by man (Beech and Shepherd, 2001; Beech, 2003). It has a good tolerance to cold and dry–hot climates. Dare fruit have been found effective in constipation, inflammation, chemical induced toxicity, ulcer and hypertension.Date seeds constitute between 10 to 15% of date fruit weight (Hussein *et al.*, 1998) and contain relatively high amount of protein (5.1g/100g) and fat (9.0g/100g) compared to date flesh. They are very rich source of dietary fiber (73.1g/100g), phenolics (3942mg/100g) and antioxidants (80400µmol/100g). The date seed have been used traditionally as the animal feed or grinded into smaller size and being roasted to turn it into caffeine-free coffee substitute, which have been commercialized by the Arabs in two types, whether plain or mixed with coffee (Rahman*et al.*, 2007; Al-Farsi and Lee, 2011). At present, date seeds are used mainly for animal feed. Utilization of such waste is very important as date seeds could potentially be considered as an inexpensive source of dietary fiber and natural antioxidants. The aim of this study was to utilize date seed powder in preparation of *churan*and to study sensory characteristics and nutrient composition.

MATERIALS AND METHODS

Materials

Four varieties of date fruit, namely Hillawi, Khadrawi, Medjool and Shamran were procured in a single lot from the Department of Horticulture, College of Agriculture, CCS Haryana Agricultural University, Hisar. All the varieties of date fruits were cleaned and washed under tap water to remove dirt and dust. All washed dates were deseeded. The seeds of date were coarsely ground in pastle mortar and to the fine powder in an electric grinder. The dried powders were stored in air tight containers at room temperature for further use.

Development of *Churan* Using Date Seed Powder

Three types of *churan* were prepared: Type-I *churan* was prepared by using 5% seed powder, Type-II by 10% seed powder and Type-III by using 15% seed powder. Other ingredients used and method of preparation of *churan* is depicted in Table 1.

Table 1: Ingredients Used and Method of Preparation of *Churan*

Product	Ingredients	Method of Preparation
Churan	Anardana powder (85g), Date seed powder (5g).Amla powder(10g), Black salt(3g), ground sugar(20g), asafoetida(2g), black pepper(3g)), *ajwain* (3g), roasted cumin seeds (3g)	Mix all ingredients and ground to a fine powder. Sieve the powder and serve.

Figure 1

The developed *churan* were evaluated organoleptically using a 9-Point Hednoic Scale prepared by a panel of ten judges selected from I.C. College of Home Science, CCS Haryana Agricultural University, Hisar. The *churan*were also analysed for their proximate composition (moisture, crude protein, fat, crude fibre and ash) using standard methods (AOAC, 2000). The results were statistically analysed using ANOVA.

RESULTS AND DISCUSSIONS

Sensory Evaluation of *Churan*

Three types of *churan* were prepared by using seed powder of all the varieties of date fruit Type-I *churan* was prepared by using 5% seed powder, Type-II by 10% seed powder and Type-III by using 15% seed powder. The mean scores of sensory characteristics of *churan* are presented in Table 2. The mean sensory scores of control *churan*(prepared without seed powder of date fruit) for colour, appearance, aroma, texture, taste and overall acceptability were 8.00, 7.80, 7.70, 7.65, 7.80 and 7.73 respectively, which fell in the category of 'like very much'. The mean scores of Type-I *churan*of Hillawi variety were 6.80, 6.80, 6.55 and 6.83 for appearance, aroma, taste and overall acceptability, respectively, which fell in the category of 'like moderately'. The mean sensory scores of Type-II and Type III *churan*of Hillawi variety fell in the category of 'like moderately' and 'like slightly'

The mean sensory scores of Type-I *churan* of Khadrawi variety were 8.25, 7.95, 7.85, 7.90, 7.95 and 7.88 for colour, appearance, aroma, texture, taste and overall acceptability, respectively, which fell in the category of 'like very much'. The mean scores of Type-II *churan*of Khadrawi variety for aroma, texture and taste were same i.e. 7.35 and in the category of 'like moderately', whereas mean score for colour and appearance were 8.05 and 7.60 respectively, which fell in the category of 'like very much'. The mean score of Type- II *churan*ofKhadrawi variety for overall acceptability was 7.45 which fell in the category of 'like moderately'**.** The mean sensory scores of Type- III *churan*ofKhadrawi variety were 6.60, 6.70, and 6.90 for appearance, taste and overall acceptability respectively, which fell in the category of 'like moderately'; whereas score for aroma (6.50) and texture (6.40) were in the category of 'like slightly'. The colour was having the mean score of 7.55 'liked very much.

The mean scores of Type-I *churan* ofMedjool variety for aroma, texture, taste and overall acceptability were 7.45, 7.50, 7.50 and 7.54 respectively, which were in the category of 'like moderately; whereas score for colour and appearance were 7.75 and 7.60 respectively, which fell in the category of 'like very much'.

The mean sensory scores of Type-II *churan* ofMedjool varietywere 7.0, 6.90, 6.70, 6.75 and 6.99 for appearance, aroma, texture, taste and overall acceptability respectively, and fell in the category of 'like moderately' except colour (7.80) which was 'liked very much' by the judges. Type-III *churan* ofMedjool variety had 6.50, 6.25, 6.05 and 6.20 mean scores for appearance, aroma, texture and taste respectively, and fell in the category of 'like slightly'. The scores for colour and overall acceptability were 7.45 and 6.70 respectively, and fell in the category of 'like moderately'.

The mean scores of Type-I *churan* ofShamran varietyfor colour, appearance, aroma and overall acceptability were 7.95, 7.80, 7.65 and 7.62 respectively, which fell in the category of 'like very much', whereas mean score for texture and taste were 7.25 and 7.35 respectively, which fell in the category 'like moderately'. The mean sensory scores of Type-II *churan* ofShamran variety were 7.40, 7.40, 7.50 and 7.45 for appearance, aroma, texture and overall acceptability respectively, and fell in the category of 'like moderately' except colour (7.80) and taste (7.70) which were 'liked very much' by the judges. The mean scores of Type-III *churan* of Shamran varietyfor appearance, aroma, taste and overall acceptability were 6.60, 6.75, 6.70 and 6.95 respectively, which fell in the category of 'like moderately', whereas mean score for colour was 7.75 which fell in the category 'like very much'. The mean score for texture (6.40) of Type-III *churan*fell in the category of 'like slightly'.

Overall, it was observed that supplemented *churan* prepared from seed powder of all the varieties were acceptable in terms of all the sensory characteristics, however the scores were higher in Type-I *churan* as compared to Type-II *churan* and Type-III *churan*.Ashoush and Gadallah (2011) reported that biscuits fortified with 20% mango kernel powder showed highest score in overall acceptability as compared to other various concentrations of mango kernel powder.Halaby *et al*. (2014) reported that pan bread fortified with 15% date seed powder showed the highest score in overall acceptability when compared to control pan bread and other various concentrations of date seed powder.

Table 2: Mean Scores of Sensory Characteristics of *Churan* Incorporating Seed Powder of Date Fruits

Sensory Characteristics						
Products	**Colour**	**Appearance**	**Aroma**	**Texture**	**Taste**	**Overall Acceptability**
Hillawi*churan*	**Scores**					
Control:AP	8.00±0.00	7.80±0.08	7.70±0.13	7.65±0.15	7.80±0.08	7.73±0.12
Type-I DSP:AP::5:95	7.65±0.20	6.80±0.19	6.80±0.13	6.45±0.20	6.55±0.16	6.85±0.12
Type-II DSP:AP::10:90	7.60±0.21	6.55±0.17	6.45±0.16	6.20±0.19	6.35±0.17	6.63±0.14
Type-III DSP:AP::15:85	7.55±0.22	6.55±0.17	6.35±0.15	6.15±0.18	6.30±0.17	6.58±0.22
CD(P≤0.05)	NS	0.46	0.41	0.52	0.43	0.45
Khadrawi*churan*	**Scores**					
Control:AP	8.00±0.00	7.80±0.08	7.70±0.13	7.65±0.15	7.80±0.08	7.73±0.12
Type-I DSP:AP::5:95	8.25±0.20	7.95±0.22	7.85±0.24	7.90±0.25	7.95±0.24	7.88±0.22
Type-II DSP:AP::10:90	8.05±0.19	7.60±0.28	7.35±0.28	7.35±0.28	7.35±0.28	7.45±0.27
Type-III DSP:AP::15:85	7.55±0.20	6.60±0.31	6.50±0.27	6.40±0.27	6.70±0.30	6.90±0.22
CD(P≤0.05)	NS	0.71	0.69	0.70	0.77	0.64
Medjool*churan*	**Scores**					
Control:AP	8.00±0.00	7.80±0.08	7.70±0.13	7.65±0.15	7.80±0.08	7.73±0.12
Type-I DSP:AP::5:95	7.75±0.13	7.60±0.15	7.45±0.20	7.50±0.15	7.50±0.15	7.54±0.15
Type-II DSP:AP::10:90	7.80±0.13	7.00±0.11	6.90±0.07	6.70±0.11	6.75±0.08	6.99±0.84
Type-III DSP:AP::15:85	7.45±0.22	6.50±0.15	6.25±0.13	6.05±0.16	6.20±0.15	6.70±0.22
CD(P≤0.05)	0.48	0.54	0.52	0.54	0.55	0.50
Shamran*churan*	**Scores**					
Control:AP	8.00±0.00	7.80±0.08	7.70±0.13	7.65±0.15	7.80±0.08	7.73±0.12
Type-I DSP:AP::5:95	7.95±0.14	7.80±0.08	7.65±0.19	7.25±0.21	7.35±0.17	7.62±0.16
Type-II DSP:AP::10:90	7.80±0.15	7.40±0.19	7.40 ±0.18	7.50±0.13	7.70±0.11	7.45±0.15
Type-III DSP:AP::15:85	7.75±0.20	6.60±0.31	6.75±0.32	6.40±0.27	6.70±0.30	6.95±0.24
CD(P≤0.05)	NS	0.54	0.52	0.54	0.55	0.50

Values are mean ± SE of ten independent determinations

DSP: Date seed powder AP: Anardana powder

Nutrient Composition of *Churan*

Data presented in Table 3indicates that Control *churan* had significantly (P≤0.05) higher (2.27%) moisture content as compared to *churan* of Shamranvariety (2.10%), *churan* of Khadrawi variety (2.10%), *churan* of Hillawi variety (2.09%) and *churan* of Medjool variety (2.09%).There was non-significant (P≤0.05) difference observed in the moisture content of the *churan* prepared using seed powder of different varieties of date fruit. It is evident from the data that there was a non-significant (P≤0.05) difference in the crude protein and fat content of *churan* prepared using seed powder of all the varieties of date fruit.Crude fiber content was found to be highest in *churan* of Khadrawi varieties (9.75%) followed by *churan* of Hillawi variety (9.27%), *churan* of Shamran variety (8.71%), *churan* of Medjool variety (8.23%) and control *churan* (7.04%). There was non-significant (P≤0.05) difference observed in the ash content of the *churan* prepared using seed powder of different varieties of date fruit.

Table 3: Nutrient Composition of *churan* Incorporating Seed Powder of Date Fruits

Product (Date fruit variety)	Nutrients (%)				
	Moisture	Crude Protein	Fat	Crude Fiber	Ash
Churan(Control)	2.27±0.03	5.45±0.03	0.49±0.04	7.04±0.10	0.30±0.01
Churan(Hillawi)	2.09±0.02	5.29±0.41	0.46±0.03	9.27±0.02	0.28±0.01
Churan(Khadrawi)	2.10±0.01	4.73±0.32	0.56±0.02	9.75±0.10	0.28±0.02
Churan(Medjool)	2.09±0.09	5.02±0.12	0.44±0.06	8.23±0.02	0.27±0.05
Churan(Shamran)	2.10±0.09	5.11±0.07	0.50±0.02	8.71±0.04	0.27±0.01
C.D. (P≤0.05)	0.05	NS	NS	0.21	0.01

CONCLUSIONS

It was observed that *churan* prepared from seed powder of all the varieties were acceptable in terms of all the sensory characteristics, however the scores were higher in Type-I *churan* as compared to Type-IIand Type-III *churan*. The study showed that *churan* prepared from seed powder of khadrawi variety was highly acceptable. Crude fiber content was also highest in *churan* of Khadrawi variety.

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