

Short Communication

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NEWER APPLICATIONS OF AMARANTHS

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INTRODUCTION

With a view to utilising the lysine-rich high protein Rajgeera, (*A. paniculatas* Linn), chips were prepared by blending it with rice and corn flour. A level of 60% Rajgeera for both combinations was found suitable. The prepared chips were not only organoleptically acceptable but also had a lower fat absorption as compared to potato chips.

In India, *Amaranthus paniculatas* linn, which is commonly called as Rajgeera, Ramdana or Keerai has been used traditionally since ages in the form of confections such as *chikkis/laddoos* and as *poories* on fasting days when the eating of conventional cereals is forbidden.

Amaranth has been gaining recognition in recent years as a lysine rich high protein grain [1-3] with 90% digestibility and PER comparable to casein [4]. Addition of amaranth to Ragi [5], wheat [6] and corn [7] has been shown to increase the PER appreciably. A combination of amaranth and rice in 1:1 ratio is known to give an amino acid composition approaching that of the FAO/WHO standard [8].

Rice and corn have been used for the preparation of chips since long. With a view to improving the protein quality of these chips, it was attempted to incorporate the lysine-rich Rajgeera flour in conventional rice and corn chips. It was also attempted to prepare chips from Rajgeera alone for finding out an additional outlet for this highly nutritious grain. The chips prepared were then evaluated.

Flours of rice and Rajgeera were mixed in various proportions ranging from 0-100%. To 50 g of the flour 400 ml water and 1.0g salt were added. The mixture was boiled with stirring for 10 min. to thicken the paste. About 6-7 g. of this slurry were then spread on a greased tray in the form of circular chips (3-4 cm in dia.) and dried at 50⁰ overnight.

Doughs containing per 100 g. of the flour mixtures 0, 20, 40, 60, 80 and 100% corn flour and the remaining Rajgeera flour were prepared by the addition of 76.0 ml water and 2.0 g. salt to the flour mixtures. This was steamed for 10 min. to enable the cooking of the dough. The doughs were then kneaded, broken into small balls of 4-5 g., rolled out to thin sheets out into circular chips of

Table 1. Characteristics of chips prepared from blends of Rajgeera with rice and corn

Rice: Rajgeera	Rice-Rajgeera blends		Corn: Rajgeera	Corn-Rajgeera blends	
	Acceptability ^ε score	Base of handling		Acceptability ^ε score	Rollability character
100:0	(2.2)	+	100:0	3.4	Not rollable
80:20	(2.0)	+	80:20	3.6	Not rollable
60:40	(2.0)	+	60:40	2.0	Rollable
40:60	(1.8)	+	40:80	1.9	Rollable
20:80	(1.5)	-	20:80	1.9	Easy to roll
0:100	(1.2)	-	0:100	1.7	Very easy to roll

^ε - Average scores based on a 21 member panel according to 'Ranking the degree of preference': 1. most liked and 4. least liked

+ - Easy to remove from the greased tray

- - Very difficult to remove from the greased tray

Table 2. Frying characteristics of optimised rice-Rajgeera and corn-Rajgeera chips.

Character	Rice-Rajgeera (40:60)	Corn-Rajgeera (40:60)
Oil used for frying	Refined groundnut oil	Refined groundnut oil
Temp. of the oil used (°C)	185	185
Thickness of the chips (mm) ^a	1.087 ± 0.147	0.804 ± 0.097
Expandability ^a	1.080 ± 0.0149	1.142 ± 0.0239
Oil absorption (%) ^b	26.931 ± 0.338	21.136 ± 0.531

^a(mean ± SD) of 7 determinations

^b(mean ± SD) of 3 determinations

about 7-8 cm dia. The chips were dried at 50^o overnight.

The dried chips were then fried in refined groundnut oil at 185^o. Oil absorption of the chips was determined using Soxhlet extraction [9]. Thickness of the chips was measured by a micrometer screwgauge. Expandability was determined as the ratio of chip circumference after frying to that before frying. Acceptability scores were obtained according to the Ranking test in order of degree of preference [10].

Results in Table 1 on characteristics of rice-Rajgeera chips showed that the chips prepared from 100 and 80% Rajgeera stuck to the tray and it was very difficult to remove them. However, chips containing 0-60% Rajgeera could be easily removed from the tray and hence easy to handle. The fact that the chips containing 100 and 80% Rajgeera stuck to the tray may be attributed to the waxy nature of the Rajgeera starch [11]. On the basis of organoleptic and handling characteristics, chips containing 60% Rajgeera and 40% rice were found to be the best.

It was observed from the results in Table 1 that the chips containing 100 and 80% corn were very difficult to roll. The rollability character sets is at 60% corn, improves at 40% corn with maximum ease of rolling at 20 and 0% corn. Products containing 40-100% Rajgeera were acceptable in all respects. However 60% Rajgeera and 40% corn gave a product most acceptable to all palates in a 21-member

panel. This, along with ease of processing was the deciding factor for selecting 60% Rajgeera and 40% corn as the optimised product.

The frying characteristics of the optimised chips are shown in Table 2. It was observed that the expansibility was of the order of 1.080 and 1.142 for rice-Rajgeera and corn-Rajgeera chips respectively. The oil absorption was of the order of 26.931% and 21.136% for rice-Rajgeera and corn-Rajgeera chips, which is lower than that observed for potato chips [12]. These observations suggest a potential utilisation of the nutritious Rajgeera flour.

Key words: Amaranths application

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