

of morphological Characteristics and study Location (around 2.0 km from ATPS) in residential colony.

The samples of neem leaves were collected throughout the year homogeneously from a height of 2 meters of matured neem tree and after laboratory processing followed by Physico-chemical analysis of the samples has been done by using standard methodology. Chlorophyll was estimated from fresh leaves by Spectrophotometry [16]. while protein [17], polyphenols [18], carbohydrates [19], Nitrogen (H₂O₂ method -525 nm) and phosphorus (470 nm) were quantified from dried leaves by using UV-VIS Spectrophotometer. Rest Elemental composition of Sodium, Potassium and calcium were quantified by flam photometry.

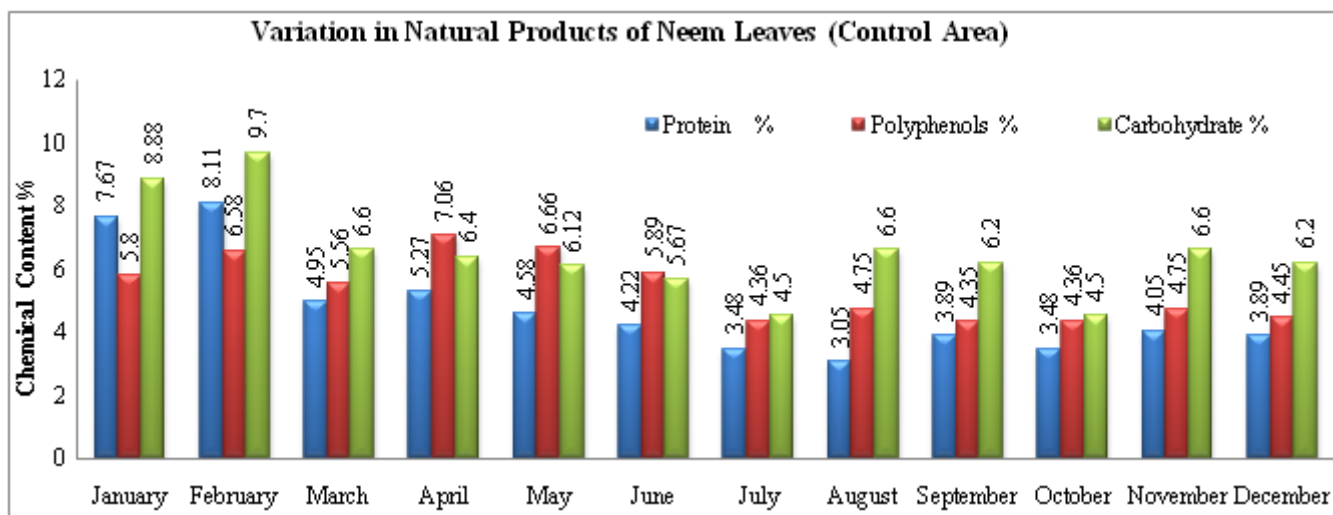
3. Results and Discussion

Neem leaves are excellent source of some minerals and they contain adequate quantity of trace minerals except Zinc, for which the recommended requirement is 40 ppm [20]. However optimal levels of Zn are necessary for the normal function of the human body since Zn toxicity is associated with low Cu status, altered Fe function, reduced immune function and reduced levels of high-density lipoproteins

[21]. Quantitative Analysis of neem leaves carried out from the collected leave samples from A.T.P.S. Residential colony, Chachai (M.P.) on monthly basis during the year. The results of Quantitative analysis of Fresh Neem Leaves after laboratory processing are given hereunder (Table: 1).

Table 1: Quantitative Analysis of Natural Products of Fresh Neem Leaves (control area)

Month	Protein %	Polyphenols %	Total carbohydrate %
January	7.67	5.8	8.88
February	8.11	6.58	9.7
March	4.95	5.56	6.6
April	5.27	7.06	6.4
May	4.58	6.66	6.12
June	4.22	5.89	5.67
July	3.48	4.36	4.5
August	3.05	4.75	6.6
September	3.89	4.35	6.2
October	3.48	4.36	4.5
November	4.05	4.75	6.6
December	3.89	4.45	6.2
CD _{0.05}	0.0705	0.3339	0.5095
CD _{0.01}	0.0966	0.4575	0.6980
SE ±	0.0336	0.1589	0.2425

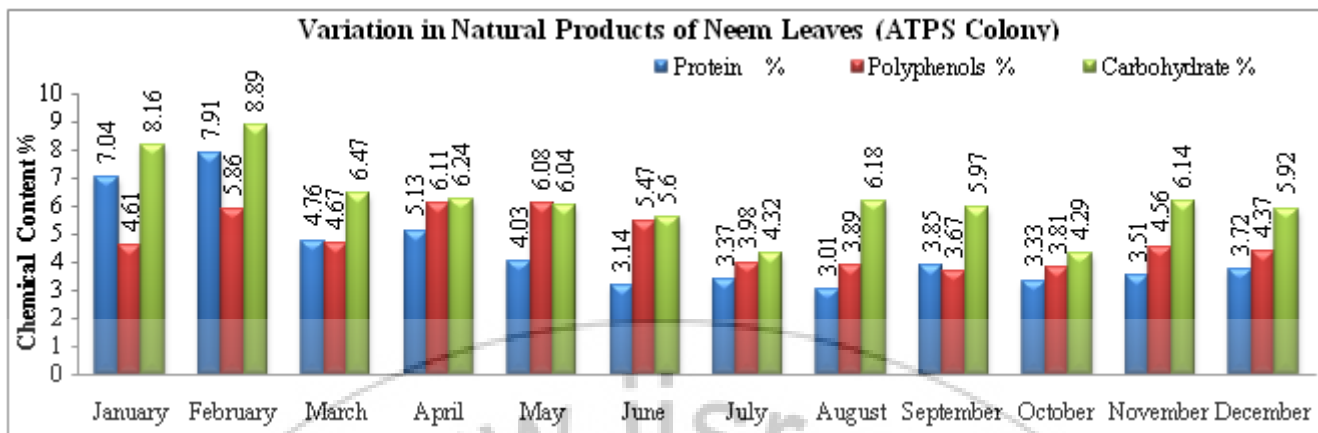


Graph 1: for Table: 1 (Quantitative Analysis of Natural Product of Fresh Neem Leaves- Control Area)

Statistically significant seasonal difference (P<0.05) were found for Protein, Polyphenols and Total carbohydrate. While in the analysis of ATPS colony neem leaves it was observed that leaves have less Protein, Polyphenol and Carbohydrate content (table-2) than neem leaves (control area) presented in Table-1.

Table 2: Quantitative Analysis of Natural Product in Neem Leaves at ATPS Colony throughout the Year.

Month	Protein %	Polyphenols %	Carbohydrate %
January	7.04	4.61	8.16
February	7.91	5.86	8.89
March	4.76	4.67	6.47
April	5.13	6.11	6.24
May	4.03	6.08	6.04
June	3.14	5.47	5.6
July	3.37	3.98	4.32
August	3.01	3.89	6.18
September	3.85	3.67	5.97
October	3.33	3.81	4.29
November	3.51	4.56	6.14
December	3.72	4.37	5.92
CD _{0.05}	0.0680	0.3346	0.5011
CD _{0.01}	0.0935	0.4569	0.6835
SE ±	0.0316	0.1572	0.2537

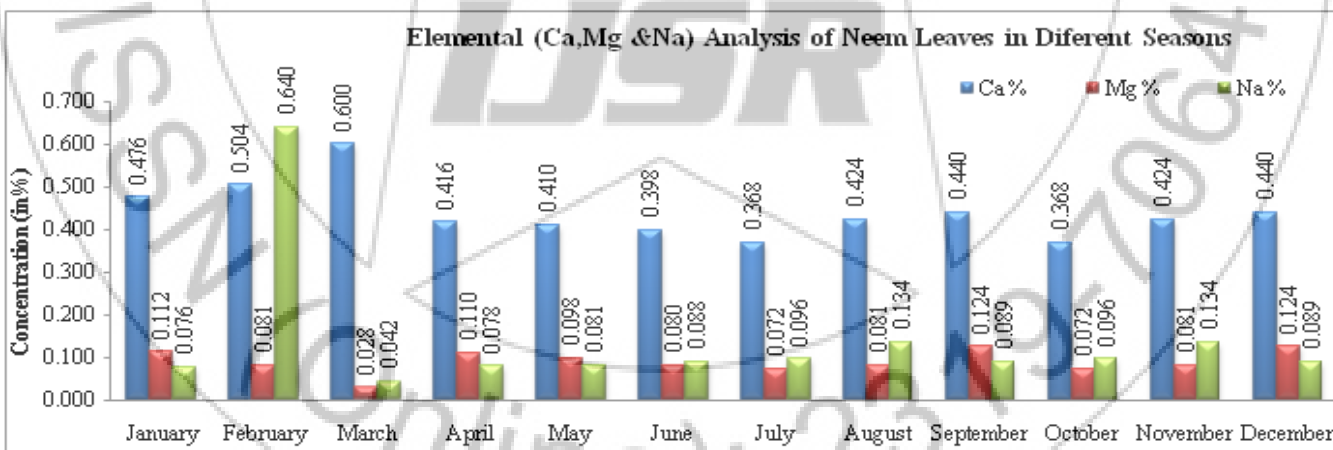


Graph 2: for Table: - 2 (Quantitative Analysis of Natural Product in Study site [ATPS Colony] Neem Leaves)

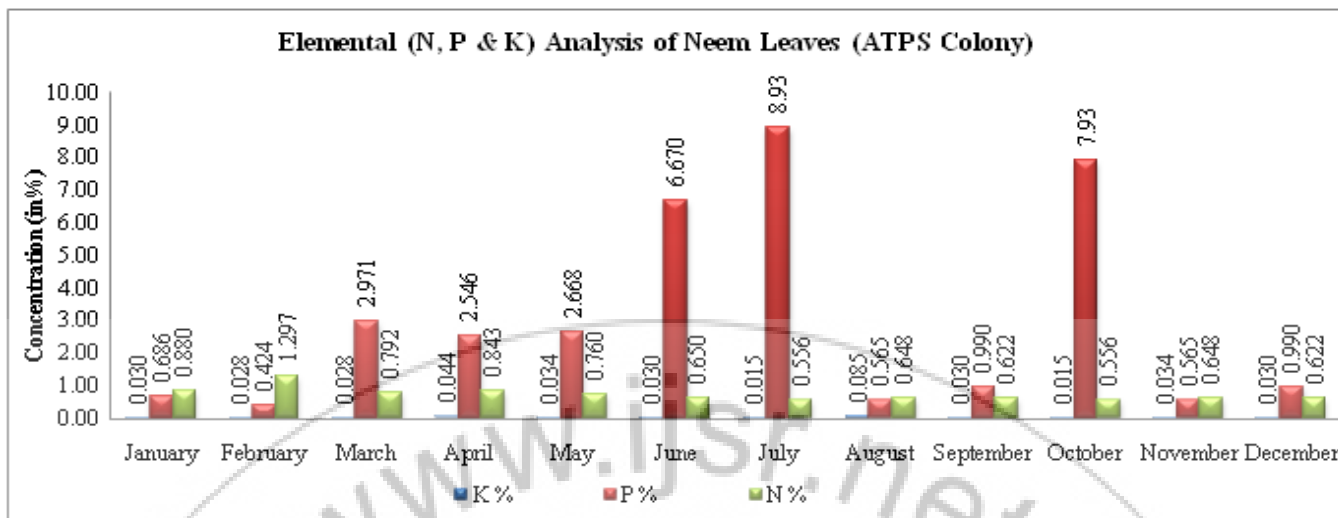
Significant variation was observed in elemental composition but the amounts of elements were more or less uniformed except Phosphorus (Table: 3).

Table 3: Elemental Analysis of Neem leaves in Different Seasons

Month	Ca %	Mg %	Na %	K %	P %	N %
January	0.476	0.112	0.076	0.030	0.686	0.880
February	0.504	0.081	0.640	0.028	0.424	1.297
March	0.600	0.028	0.042	0.028	2.971	0.792
April	0.416	0.110	0.078	0.044	2.546	0.843
May	0.410	0.098	0.081	0.034	2.668	0.760
June	0.398	0.080	0.088	0.030	6.670	0.650
July	0.368	0.072	0.096	0.015	11.930	0.556
August	0.424	0.081	0.134	0.034	0.565	0.648
September	0.440	0.124	0.089	0.030	0.990	0.622
October	0.368	0.072	0.096	0.015	11.930	0.556
November	0.424	0.081	0.134	0.034	0.565	0.648
December	0.440	0.124	0.089	0.030	0.990	0.622
CD _{0.05}	0.0290	0.0417	0.0023	0.1354	0.0212	0.0049
CD _{0.01}	0.0398	0.0571	0.0032	0.1855	0.0290	0.0067
SE ±	0.0138	0.0198	0.0011	0.0644	0.0101	0.0023



Graph 3: for Table: 3 (Analysis of Ca, Mg & Na in Neem leaves)

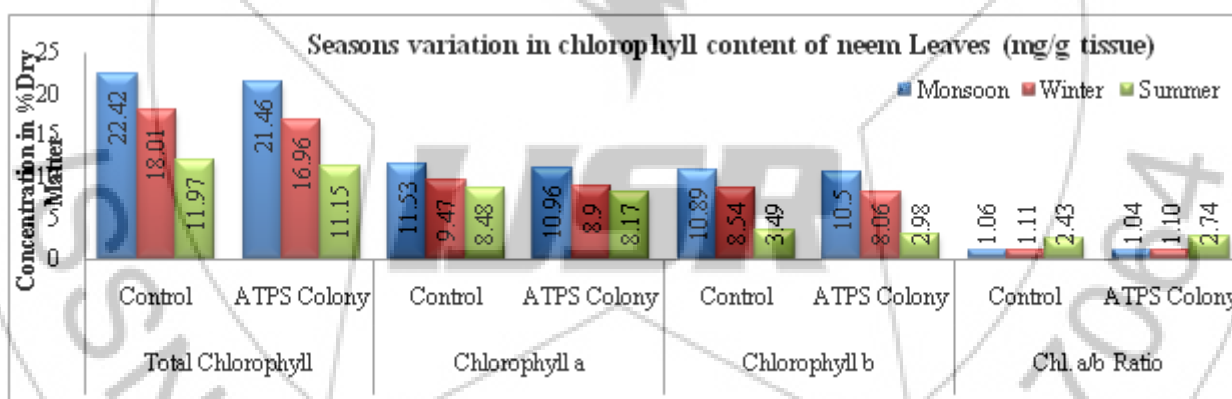


Graph 4: for Table: 3 (Analysis of N, P and K in Neem leaves)

The green Neem leaves were extracted and absorbance of these extracts was read against blank at 645 and 663 nm wavelengths. Chlorophyll (a, b and Total) amounts were calculated from the obtained absorbance values.

Table 4: Seasonal variations in chlorophyll content of Neem Leaves (mg/g tissue)

Sl. No.	Season	Total Chlorophyll		Chlorophyll a		Chlorophyll b		Chlorophyll a/b Ratio	
	Area	Control	ATPS Colony	Control	ATPS Colony	Control	ATPS Colony	Control	ATPS Colony
1	Monsoon	22.42	21.46	11.53	10.96	10.89	10.5	1.06	1.04
2	Winter	18.01	16.96	9.47	8.9	8.54	8.06	1.11	1.10
3	Summer	11.97	11.15	8.48	8.17	3.49	2.98	2.43	2.74



Graph 5: for Table: 4 Seasonal variations in Chlorophyll contents of Neem Leaves

4. Conclusion

This study concludes that all foliar chemicals were found to be significantly different in different months of year. Protein content was found maximum in February (8.11%) while minimum observed in the month of July (3.48%), Polyphenols content was found maximum in Month of April (7.06%) and minimum in the month of September (4.35%), carbohydrate Max. found in February (9.70%) and Min. observed in October (4.50%). Although significant variation ($P < 0.05 - P < 0.01$) was observed in elemental composition in different months of the year except Phosphorous content, which was increased in the month of June (6.67%), Oct. (7.93%) and July (8.93%). The Total Chlorophyll content in the Control Area neem Leaves reported (mg/g tissue) max. In Monsoon (22.42) comparatively higher followed by winter (18.1) and

summer (11.97) however the Chl. a/b ratio is high in summer (2.43) against monsoon season (1.06). Meanwhile Chlorophyll content in the ATPS Colony neem Leaves reported (mg/g tissue) max. In Monsoon (21.46) comparatively higher against winter (16.96) and summer (11.15) however the Chl. a/b ratio is high in summer (2.74) against winter (1.10) and monsoon season (1.06). Hence on the basis of overall data obtained from the quantitative analysis of foliar chemicals reveals the sustainable growth of neem around Amarkantak Thermal Power Plant. Consequently it is recommendable to the new coming thermal power industries that Neem Tree "*Azadirachta Indica* A. Juss" is more effective and appropriate to build the greenbelt cover along with protection of environment by plantation of such Sustainable species in and around of coal fired Thermal Power Plants.

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