SUMMARY

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Banana is considered one of the most popular fruit crop in Egypt, but its various properties have not been fully studied. This work was carried out to investigate the chemical and biological characteristics of both the edible and non-edible portions of Banana fruit. The possible therapeutic values of both banana pulp and peel were also explored in this present investigation. The most important results obtained are summarized as follows :

1) The average number of Banana figures is 17 kg with an average finger weight of 58.8 gm and the edible protein represents 62% of this weight.

2) The alcoholic extract of Banana pulp and peel reached 58 and 12%, and the watery extract 64 and 24%, respectively. Moreover, the pH value of the water extract of the pulp and peel is 4.7 and 5.1 respectively, whereas, it is 3.7 in the alcoholic extract of both the pulp and peel.

Chemical analysis of Banana pulp and peel, calculated per 100 gm of the dry solids, is as follows :
Total nitrogen is 0.82 in the pulp and 1.74% in the peel
Protein nitrogen is 0.26 in the pulp and 0.34% in the peel.

Total amino acids is 1.4 in the pulp and 2.3% in the peel
Ash content is 3.6 in the pulp and 16.9% in the peel
Crude fiber is 1.55 in the pulp and 12.8% in the peel
Calcium is 70.19 in the pulp and 442 mg/100 gm in peel
Iron is 0.47 in the pulp and 1.65 mg/100 gm in peel
Phosphorus is 88.3 in the pulp and 76.9 mg/100 gm in peel
Ether extract is 2.29 in the pulp and 7.21% in the peel
Total sugars is 76.13 in the pulp and 27.5% in the peel
Starch is 14.6 in the pulp and 7.99% in the peel
Pectin is 2.3 in the pulp and 3.4% in the peel
Vitamin C content is 40 in the pulp and 23.5 mg/100 gm in peel
Riboflavin is 0.90 in the pulp and 1.08 mg/100 gm in peel
Thiamin is 0.08 mg/100 gm in both pulp and peel

4) Preliminary chemical analysis to detect the pharmacologically active substances revealed the presence of some chemical constituents on which the pharmacological and therapeutic effects depend. The most important individuals of these substances are : tannins, resines, alkaloids, glucosides, sapanis, ...etc, which were detected in the extracts.

5) The biological evaluation of Banana fruit, when tested on rats, showed that animals fed on the pulp or peel diet resulted in a negative P.E.R. value when compared with

the control rats received casein diet. Furthermore, there is no significant increase of the growth rate noticed in rats fed on Banana pulp or peel when mixed with the stock diet. This finding may be attributed to the poor quality protein of banana protein. It is recommended, therefore, to mix banana with other substances of high quality protein.

6) Pharmacological screening of both banana pulp and peel indicated that these preparations are pharmacologically active substances and possess certain therapeutic possibilities. This gives banana certain therapeutic values in various diseases and disorders.

7) Banana, for its mineral contents: phosphorus, calcium and iron, may be of benefit in conditions associated with than deficiency e.g. rickets and anaemia. The ascorbic acid content of banana renders it useful as an antiscorbutic fruit.

8) Banana pulp, but not the peel, is of oestrogen-like effects since it produced vaginal cornification and uterine development.

9) Banana pulp possesses laxative effects as it activates intestinal movement and could, therefore, be used in

constipation. On the other hand, both pulp and peel are of uterine antispasmodic action since the deminished the amplitude and frequency of its contractions at all conditions of sex cycle, the pulp stimulated the contractility of oestrous uterus, probably due to the possible presence of serotonin.

10) Banana pulp lowers the blood pressure through a direct effect on the blood vessels. The pulp is, therefore, of a hypotensive effect and can, therefore, be used an antihypertensive diet.

11) Banana is of definite effects on some disease causative organisms, since the pulp and peel proved to be of antibacterial effect when tested on E. coli and C. ovis. Moreover, the peel is of an antihelmintic properties since it increased the parasite motility and may detach the parasite hold from the intestinal wall. This necessitates a purge to be given to aid expulsion of the overstimulated parasite. It seems possible that banana pulp and peel can be used as antibacterial against bacterial infections, and as anthelmintic against parasitic infestation particularly taenia and ascaris.

In conclusion, banana fruit proved to be of different

pharmacological effects, accordingly it possesses certain therapeutic properties. It is possible, therefore, to use this fruit as a diet therapy in various systemic diseases, Banana, moreover, for its vitamin and mineral contents is probably one of the fruits of importance in deficiency diseases.