

# Nutritional Value of Indigenous Plants

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Anything green that grew out of the mould  
Was an excellent herb to our fathers of old.

Kipling

Mankind must have found out which plants he could eat, which had medicinal properties and which were poisonous, by the hard road of trial and error. Judging by the enormous number of plants in the first group it seems likely that the need to assuage hunger was reinforced by the desire for a variety of flavours, or even by mere curiosity.

All these plants must have been eaten raw until ways of creating fire were discovered. Leopold and Ardrey<sup>1</sup> place this discovery at as little as 300 000 years ago for the colder areas, and perhaps as recently as 56 000 years ago for Africa; as they point out, this must greatly have extended Man's food resources, also leading later to the cultivation of cereals, which all require to be cooked.

The cultivation of crops marked a third and most important stage in Man's dietetic history. To-day Western societies cultivate almost all the plants they eat, with the curious result that our own food repertoire is far more restricted than that of many rural Blacks; although they cultivate only a few staple foods they possess or did possess, a wealth of knowledge about local indigenous foods and other foods. For instance, 60 edible leaves have been reported from one area and some 40 fruits from another.

Detailed records are now available for the plants eaten in different parts of the world, some used widely, others only in times of famine, others as local delicacies. But taken together they are a tribute to Man's close contact with nature, as well as his remarkable if empirical knowledge of botany. In the words of Sir William Roberts, 'they are the fruit of a colossal experience accumulated by countless millions of men through successive generations'. Should we not respect this experience, rather than despise it, as is the usual attitude?

The earliest records consist of lists made by observant persons regarding the plants eaten in their locality. Thus in 1907 Bryant<sup>2</sup> mentions by name '10 herbs (wild) in common use in Zululand'. Later came the anthropologists, whose lists often include the botanical as well as the local names (e.g. Beemer's<sup>3</sup> report for Swaziland, and we now have Rose's<sup>4</sup> comprehensive list for the Transkei). Details of how the plants used are prepared and cooked are fully described in Quin's<sup>5</sup> book on the food of the Pedi, as well as in Gelfand's<sup>6</sup> account of the diet of the Shona of Rhodesia.

Concurrent with the collection of this basic information, attention began to be directed towards the chemical composition and nutritional value of such plants. One of

the earliest South African studies of this type was a paper in 1936 by Levy *et al.*,<sup>7</sup> which contained some rather crude analyses of a few commonly-eaten leaves. Such analyses have gradually become more numerous and elaborate, especially in India and South America. Because many of the plants studied are also eaten here, we included a number of these analyses in a booklet published in 1966.<sup>8</sup> But of course the real need is for analyses of local samples; hence the value of the work being done by the National Research Institute for Nutritional Diseases.<sup>9</sup>

A good deal is now known about the nutritional value of many of these plant foods; this helps to explain why it is that an adequate supply of such simple foods can maintain health and vitality, even in extreme old age.<sup>10</sup> Were we willing to learn, these regimens have much to teach us.

So far so good: but when thinking about the future I want to stress the need for nutritionists to integrate their findings more closely with those of the toxicologists than is usual at present.

Historically, Man learnt to use the plant world not only as a source of food but also for his medicines; nor did he at first make much of a distinction between the two categories. Even today no sharp distinction is always possible; for instance, the ascorbic acid present in so many plants protects us from scurvy; yet, if given as orange juice or in the synthetic form to cure this disease, the same substance must be regarded as a medicine or a drug.

Even a casual examination of Watt and Breyer-Brandwijk's<sup>11</sup> monumental book on our medicinal plants shows that many used widely as foods also possess medicinal properties, or can sometimes even be poisonous. Unless nutritionists take note of such findings, our analyses are inadequate and could be misleading.

Leopold and Ardrey<sup>1</sup> point out that since plants cannot flee from their predators they have solved their survival problem in some cases by accumulating substances not required for their metabolism, but useful in repelling or discouraging their consumption by insects, micro-organisms, nematodes, grazing animals and man. Many of the foods we eat contain one or more of these substances. They have been classified into 5 groups, namely the enzyme inhibitors, physiological irritants, allergens, oestrogens or goitreogens, and the vitamin or amino acid antagonists. Obviously, when the ill-effects are insidious in their onset the food responsible may be hard to detect, e.g. the chronic toxicity that can occur among habitual cassava eaters.

To this formidable list must be added the risks depending on the precise variety eaten, the soil and method of cultivation, the stage of maturity when eaten, the effects of poor storage, as well as the precise method of preparation employed. When he knows about these dangers to his health, Man has learnt, and is still learning, how to

outwit them; thus he can avoid the harmful part of a plant (rhubarb leaves); he can reduce or eliminate its toxicity by leaching (cassava), or by cooking (the enzyme inhibitors), or by prolonging the time of fermentation (the high phytic acid content of some Iranian wheats).

In the future Man will become more and more dependent on plants for his food, so that it will become increasingly necessary to know their defects as well as their merits; this we can do with the help of the toxicologists. We also need to caution the public, many of whom are developing the naive belief that 'everything green which grows out of the mould' is *ipso facto* a wholesome herb that can be eaten with impunity.

## REFERENCES

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