	Blood pressure	V/min	Na excr. aq./min	GFR	RBF	R
	Hypotension induced by constriction of the aorta					
Innervated series (16 exp.)	109 ± 11	2·32 ± 1·41	254 ± 178	54 ± 21	472 ± 136	0·25 ± 0·08
	70 ± 6	11 ± 10%	11 ± 12%	63 ± 27%	80 ± 38%	88 ± 14%
Transplanted series (26 exp.)	121 ± 10	3·45 ± 2·92	309 ± 224	49 ± 14	332 ± 140	0·42 ± 0·11
	74 ± 9	32 ± 31%	25 ± 21%	75 ± 33%	79 ± 16%	80 ± 13%
	Hypotension induced by bleeding					
Innervated series (34 exp.)	114 ± 16	2·31 ± 1·74	–	57 ± 24	464 ± 129	0·27 ± 0·31
	71 ± 7	18 ± 17%	–	62 ± 33%	55 ± 18%	130 ± 55%
Transplanted series (27 exp.)	117 ± 17	2·22 ± 1·66	–	39 ± 31	281 ± 171	0·49 ± 0·18
	75 ± 14	43 ± 33%	–	77 ± 31%	67 ± 18%	100 ± 34%

thus a vasodilatation in the innervated and transplanted kidney alike. This "autonomy" of the renal vessels has been described by various authors[4].

Although in hypotension GFR decreased to practically the same values in both series (35 for the innervated, 36 for the transplanted kidney), there was a significant difference (as computed by Fisher's "t"-test[5]) in the excretion of sodium and water. In the hypotensive period the innervated kidney excreted less sodium and water than the transplanted one. Since the filtration was equal, this difference can be attributed only to an enhanced tubular reabsorption of sodium and water by the innervated kidney.

According to our view, the renal response to hypotension of the lower half of the body consists of two effects. The first is an autonomous adaptation of the renal vessels in the form of vasodilatation, which is independent of innervation. The second effect is an enhanced reabsorption of sodium and water by the innervated tubuli, and this effect is absent in the transplanted kidney.

For comparison, in the lower half of the Table we present the data of our posthaemorrhagic experiments. In this case hypotension was induced in the whole animal. The decrease in RBF was more pronounced, and although resistance increased in the innervated kidney, it remained unchanged in the transplanted one. GFR, i.e. filtered lead was about equal (34 for the innervated, 30 for the transplanted kidney) and oliguria was significantly more pronounced in the innervated kidney. That means that the enhanced tubular reabsorption of water must play a role in the posthaemorrhagic oliguria too.

The renal response to bleeding is thus a combination of two effects. The first is the vasoconstriction in the kidney brought about by the hypotension of the upper half of the body (according to GÖMÖRI[6] by hypoxia of the brain). The consequence of this vasoconstriction is a reduction of GFR leading to *some* decrease in water excretion. The second effect seems to be the enhanced tubular reabsorption of water in the innervated kidney induced by a lowering of arterial pressure in the lower half of the body.

A detailed account of our data is to be published in Acta Physiologica Hungarica.

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Physiological Institute of the University of Budapest, November 22, 1955.

Zusammenfassung

Nach Verminderung des arteriellen Blutdruckes ist die Senkung der Natrium- und Wasserausscheidung grösser in der innervierten als in der denervierten (transplantierten) Niere. Es konnte festgestellt werden, dass der verminderte Blutdruck der unteren Körperhälfte bei gleicher Filtration eine vermehrte tubuläre Natrium- und Wasserreabsorption der innervierten Niere hervorruft.

Actinomycetes Antagonistic to *Polyporus annosus* Fr.

The root-rot of Norwegian spruce (*Picea abies*) and other conifers is a serious disease causing heavy financial losses in Scandinavian forests. The mode of infection of the fungus (*Polyporus annosus* Fr.) has not been established with certainty, but the general opinion is that the mycelium of the fungus is capable of growing in the soil, where it infests the dead tap root of spruce, thus entering the living roots and the stem.

However, in the laboratory it has so far not been possible to make the fungus grow in unsterilized soil, whereas the mycelium is able to grow in autoclaved soil. Experiments have therefore been made to find out whether any relationship could be traced between antagonistic micro-organisms in the uninfested soil and the occurrence of the fungus. BJÖRKMAN[1] isolated a large number of soil fungi and tested them for their antagonistic effect on the growth of the mycelium of *Polyporus annosus*, and he found an apparent correlation between the occurrence of the mycelium and soil fungi without inhibiting effects. RENNERFELT[2] in a similar experiment

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found that more than one-third of the isolates (moulds and bacteria) had inhibiting effects on the *annosus* mycelium *in vitro*, one of them being *Trichoderma viride*, which was inhibiting at 22° C, but was itself overgrown by *P. annosus* at 12° C.

In the present investigation, a number of actinomycetes from Danish forest soil (with and without the occurrence of the fruiting bodies of *Polyporus annosus*) was isolated. Nearly half of the isolates showed antagonistic effects on the *annosus* mycelium *in vitro*; one of these isolated actinomycetes was used in the following experiments.

A series of bowls with sterile garden soil (air-dried, with the addition of sufficient water to obtain a good crumb condition, pH after autoclaving, 7·0) was inoculated with suspensions of spores of the actinomycete (*Streptomyces* sp.) and subsequently incubated for 7 days at 22° C. A control series of bowls with sterile but uninoculated soil was run. In all bowls—in both series—a young agar culture of *annosus* mycelium grown on a slide was then placed after the incubation period, with the mycelium side downwards on the surface of the soil. After a few days, the mycelium in the control series began to spread over the free surface of the soil, but in the series inoculated with *Streptomyces* sp. little or no growth of *Polyporus annosus* from the edges of the slides was observed.

The experiments were repeated, with the difference that instead of slide cultures, 10 mm diameter agar disks cut from Petri dish cultures of *P. annosus* were used. The inhibition in these experiments was very marked.

It is not possible to make any conclusion from the experiments described here as to the more complex conditions in nature, but it may be justifiable to advance the theory that actinomycetes in natural soils may be partially responsible for the non-occurrence of *Polyporus annosus* in some areas in the forests. In this connection it is reasonable to ask if it would not be possible to stimulate the flora of actinomycetes in forest soil or give it a favourable trend by the addition of suitable green manures.

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Zusammenfassung

Eine Reihe von Actinomyceten aus dänischen Waldböden wurden auf antagonistische Wirkung gegen den Wurzelfäulnispilz, *Polyporus annosus* Fr., geprüft. Einer der isolierten Organismen wirkte auch in sterilem Boden hemmend auf das Myzel von *Polyporus annosus*. Die Möglichkeit wird erwähnt, den Wurzelfäulnispilz im infizierten Boden durch Förderung des Actinomycetenwachstums mit Gründüngung zu beeinflussen.

Studies on the Ascorbic Acid and Carotene Content in Leaves as a Common Characteristic of Botanically Related Species

It has been observed that there are plant families with a high ascorbic acid content, while other families are markedly poor in this vitamin. Thus, a high antiscorbutic activity has been noted in leaves of Cruciferae, while on the other hand Compositae were found to contain relatively small amounts of vitamin C[1]. No study has so far been undertaken of the carotene content in leaves as a common property of plants belonging to the same family, but it has been observed that the carotene and chlorophyll content of higher plants run parallel with the ascorbic acid content[2]. This has been explained through the possibility of a certain functional correlation of vitamin C and these pigments[3].

The present communication concerns the results of an examination of the ascorbic acid and carotene content in leaves, which was carried out on a large scale as a part of systematic studies on the vitamin value of edible wild plants growing in Yugoslavia. This work includes the examination of 74 plant species from 26 families, the results being tabulated and made known in two previous publications[4]. Altogether 503 analyses of ascorbic acid and 200 carotene determinations have been carried out. However, the present study is limited to 7 plant families only; the number of species investigated of the remaining 19 families is too small to permit any general conclusions. Ascorbic acid was determined by titration of the metaphosphoric acid extract with 2,6-dichlorophenol-indophenol, according to a standard procedure[5]. Carotene was determined by the method described by CURTIS[6], based on the chromatographic adsorption of the petroleum ether extract on a column of soluble starch. It was calculated as beta-carotene, which accounts for about 90% of the total carotene in fresh leaves[7]. Both determinations were carried out with fresh samples immediately after gathering.

In Table I the results obtained by leaf analysis of the 7 plant families are summarized. Since a single species has been analyzed 4–12 times for vitamin C and 2–6 times for the carotene content, only the average values are given in the Table.

As to the ascorbic acid content of Cruciferae and Compositae, Table I confirms the values reported in the literature cited above. The Cruciferae examined were rich (average 182 mg%), and Compositae relatively poor (average 37 mg%) in this vitamin. According to our results it seems probable that there are also families distinguished by a relatively high carotene content (Leguminosae and Labiatae). However, in general, the amounts of ascorbic acid and carotene usually vary considerably within the same family, the differences between various species being sometimes very marked. On the basis of the data obtained, it will be hardly possible to classify categorically each plant family as more or less rich in the ascorbic acid or carotene content. We often found species belonging to one family "rich" in vitamin C whose leaves contained much smaller quantities of ascorbic acid than did the average of the family. In the leaves only of such plants we also often found a

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