

SUSUNAN KIMIA DJATI SERTA
 BERHUNGAN DENGAN TAKSONOMI DAN KATA
 HANNANJA TERHADAP INSEKTA

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for investigating the special properties of toakwood, the thorough knowledge of the extractives is required. only 8 years age, merely two extractives of teak were know : secondary calcium phosphate and tectequinone. meanwhile, however, the knowladge has been greatly onlarged some 40 other compounds have been found, the chemical constitution of many of which has been determined-. The folloiwng extractives were found: 6 new anthraquinones, 5 naphthoquinonos, 4 quinonos of still unknown structure, loaf-quinones ,2 nautral compounds with naphthalene rings (pierce formation)very small amounts of fatty oil (below 1%) consisting of 8 different fatty acids. Finally, The terpenoidal compounds squalene betulic acid, one tiriterpeno C₃₀ H₄₈ O₅ and two other terpenoids were found, The dchydronaphthol compounds, tectol and dehydrotectol, clucidated in their constitution by decomposition and synthesis

The clucidation of the constitution of a large number of compounds makes possible certain insights into the biogenesis of these materials. Without about, teak has a vigorous isoprenoid metabolism exceeding even that of the pine species. Terpenes, sesquiterpenes, and

~~dit~~diterpenes, however are not formed, but mainly caoutchouc and naphthoquinones with pronyl residues. The occurrence of substantial amounts of anthraquinones leads to the assumption that between those and the pronyl-naphthoquinones biogenetic relationship exists. However, this problem can be solved with the help of radioactive mevalonic acid and acetic acid only.

Regarding the cause of the durability, new results were gained. more or less all the anthraquinones found are effective against termites, in addition to lapachol and mainly desoxylapachol, but not toctol and dihydrotoctol. The anthraquinones proved ineffective against fungi. There are many indications that the naphthoquinones, particularly desoxylapachol, are fungicidal. Some teak varieties bring about unpleasant allergic skin diseases. Test with pure substances showed that lapachol causes slight injuries of the skin, whereas desoxylapachol brings about rather remarkable ones, even with quantities of 0.5 g.

Some technical properties of tonic may be explained on the basis of the kind and quantity of the extractives. Thus, the high content of caoutchouc should be responsible for the abrasion and the resistance against mineral acids. However, it could not yet be settled whether the content of caoutchouc preconditions the favourable swelling behaviour, for caoutchouc is not found in the cell wall but in the lumen. with the surface finishing of wood, the extractives are

equally effective in some cases. Thus, the draying of polyester lacquers inhibited by tectol, dehydrotoctol and some naphthoquinones, though not by tectoquinone.

Even though not all interrelations between the extractive and the technical properties of the teak are cleared up yet, it is a fact that desoxylapachol is injurious to health and thus not desired, whereas a high content of tectoquinones and caoutchouc is valuable. Since simple and quick methods of analysis were elaborated for determining these material in small wood samples, the contents of bore cores can be determined taken from living trees. Thus a chemical selection of mother trees with optimum properties is possible. An investigation of Indian and Indonesian teakwoods of different origin as well as an examination of bore cores from an Indonesian forest-experimental plot showed that the quantity of the different extractives scattered greatly in different teak varieties, with such tests it has to be noted that the distribution of the concentration of the extractives over the cross-section of the stem is not uniform.

Further studies have to settle the still unsolved problems such as the constitution of some extractives still unknown, the biogenesis of the naphtho- and anthraquinones with radioactively marked precursors, the importance of the caoutchouc for the swelling behaviour, and finally, the importance of the individual isolated compounds for the behaviour of teak against wood

destroyers, particularly fungi.

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