**Chemical Studies on "Bukuryo", Sclerotia of
Pachyma Hoelen RUMPH. (IV).**

Discussion of the Relation Among β -Pachyman
and Related Compounds.

By

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A study was made of the physical and the chemical properties of β -pachyman isolated from "Bukuryo", from the standpoint of the comparison with those of the closely related compounds, some of which have been considered by certain investigators, as identical, and the following conclusion has been made.

The author's β -pachyman is confirmed to be an independent carbohydrate, different from fongose (Tanret), callose (Mangin) or paradextran (Winterstein), and this should be likely, on the contrary, accepted as the same, in essence, as pectose (Gore), pachymose (Champion and Winterstein) and a carbohydrate which Wang and Takao isolated from "Bukuryo" in the different method from the case of the author's β -pachyman.

Moreover, it was found to be true that Tanret's fongose, at least, consists of two kinds of sugars, fongose I and II.

**Chemical Studies on "Bukuryo", Sclerotia of
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Nutritive Value of *Pachyman*.

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Albino rats were used and the digestion coefficient was studied with three kinds of "Bukuryo" preparations which were obtained by various methods of heating. The first was heated at 40° in water for 1.5 hours and

this treatment was repeated four times (A). In the second case, the temperature was the only factor which was varied, the water being brought to the boiling point (B). The third was autoclaved at 120° in double atmospheric pressure for 1.5 hours (C). These three samples were respectively filtered, washed thoroughly with water, dried and used for the feeding experiments. The composition of the rations used were as follows:

Ration I.		Ration II.	
"Bukuryo" preparation	14.0	Ration I (C)	50.0
Casein (Merck)	14.0	Dried white bread	50.0
Fat free dried beef powder	4.0		
McCollum's salt	3.0		
Cod liver oil	3.0		
Oryzanin	2.0		

From two to five rats were used for each ration and the observation was made for each individual rat with the following conclusions.

(1) No remarkable difference in digestion coefficient could be found among these three kinds of pachyman, through the use of treated "Bukuryo", though the gradual increase of the digestion coefficient was recognized, as the temperature rose.

(2) When the content of pachyman in the ration (dry matter) was 60~66% and the nutritive ratio was narrow, ranging from 3.5 to 3.6 and no soluble sugar was contained, the maximum digestion coefficient of pachyman was in all cases lower than 55%.

(3) When the ration II which contained appreciable amount of digestible carbohydrate was used, the digestion coefficient of pachyman became extremely low, i. e. 18%.

(4) The nutritive value of pachyman resembled somewhat that of cellulose, and therefore, it can not be used in place of other soluble polysaccharides such as dextrin, starch or glycogen.

(5) Poor nutritive value of pachyman, which is the principal constituent of "Bukuryo" and the small amount of effective nutrients, make the nutritive value of "Bukuryo" itself less valuable, from the standpoint of nutrition, and it is highly probable that this can not be used as substitute for cereal grains.