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THE IMPACT OF ALBANIAN LOCAL BOVINE RACES AS PART OF CONSERVATION BIODIVERSITY IN THE ISCHEMIC HEART DISEASES IN HUMANS

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SYNOPSIS

In this study we estimated A1/capita consumption from cow milk and cream supply (FAO database) and A1 β-casein fraction from a variety of sources. Milk and cream supply/capita was calculated from nutritional statistical databases at the FAO web site as milk protein/capita/day, excluded goats and sheep's milk. FAO food supply data were converted to nutritional measures using British food composition tables. Cow breed distribution was calculated from Center of Agriculture Technology Transfer, Animal Production Department data. Beta-casein fractions were estimated by breed from dairy science literature for 18 countries. Additionally, milk was tested from 5 breeds. IHD mortality rate data were obtained from INSTAT website.

INTODUCTION

The major cardiovascular diseases (CVD) are ischemic (or coronary) heart disease (IHD) and stroke. The component of dairy products that has been repeatedly and convincingly demonstrated to increase the atherogenic LDL cholesterol levels. The contention of the A1/A2 hypothesis is that a high intake of A1 β-casein is a further risk factor for IHD (McLachlan, 2001) although the biological plausibility of a causal relationship cannot be assessed because the potential mechanisms have not been well defined.

The best ecological study on the relationship between A1 β-casein and IHD was the one published by Laugesen & Elliott (2003). The strongest relationship with IHD mortality across 21 countries was for A1 β-casein/capita in milk and cream

(r=0.76-0.81). This is a very strong relationship especially considering the crude nature of many of the measurements (food balance sheets and national mortality statistics). The wide variation in A1 consumption across countries again increases the chance of finding statistical relationships compared to those risk factors with a very low. The highly multi-factorial nature of IHD makes such strong correlations even more surprising.

This paper is a version of the above ecological analyses for different regions of Albania. So the aim of this study was to to see if is there any correlation between the consuption of A1 milk and IHD death rate.

SUBJECT AND METHOD OF RESEARCH

COW BREED SELECTED. These included 6 breeds (table 1) for which published A1/β cow milk data (Laknori & Rexha, 2008) was obtainable.

MILK AND CREAM SUPPLY. Milk and cream supply per capita was calculated from the nutritional statistical databases at the FAO (Food and Agricultural Organization) web site (FAOSTAT nutritional databases 2008), as milk protein per capita in grams per day (Laugesen & Elliott, 2003).

NUTRITIONAL DATA. FAO food supply data were converted to nutritional measures using British food composition tables.

COW BREED DISTRIBUTIONS. We calculated the breeds distributions from Center of Agriculture Technology Transfer, Animal Production Department data (Leka et al., 2009).

A1/β AND OTHER β-CASEIN FRACTIONS (Table 1). These were estimated by breed from the dairy science literature held by the Fonterra Research Centre (FRC) for 18 countries. In addition, factory or retail milk was tested from 4 breeds during 2005 (Laknori & Rexha, 2008). A1/capita in 2008 (IHD) was estimated (Laugesen & Elliott, 2003).

MORTALITY DATA. Albania Institute of Statistics (INSTAT, 2008) and its website (www.instat.gov.al) supplied total cardiovascular disease (CVD) and IHD mortality data for 7 regions. A lag of 3 years was allowed from food supply to IHD mortality.

RESULTS AND DISCUSSION

There is a weak correlation (r = 0,15) between A1 beta casein consumption per capita and IHD death rate 3 years later (Table 2, Figure 1).

In Table 2, regions were ranked by IHD rate.

Table 1: Frequency of beta – casein variants for the cow-breeds found in different regions of Albania.

Cow-breed	Region	Allele frequency		
		B	A1	A2
Holstein	Elbasan, Fier, Gjirokaster, Lezhe, Shkoder, Tirane, Vlore	-	0,59	0,409
Black spotted (imported from Austria)	Berat,	0,501	-	0,498
Black spotted (imported from Holand)	Lezhe, Shkoder	0,476	-	0,525
Jersey	Berat, Elbasan, Gjirokaster, Lezhe, Shkoder, Tirane, Vlore	0,282	0,432	0,286
Simmental	Berat, Fier, Gjirokaster, Lezhe, Shkoder, Tirane, Vlore	-	0.343	0.566
Norwegian Red	Elbasan,	0.010	0.400	0.490

Table 2: IHD death rate and beta casein A1 consumption g/day for different regions.

Region	IHD death rate	Beta casein A1 consuption g/day
Tirana	661	0,4732
Elbasan	338	0,4798
Fier	326	0,2257
Vlora	228	0,4732
Shkodra	199	0,4732
Lezha	170	0,4732
Berat	165	0,2924

The region with lowest IHD mortality was Berat. Its milk consumption was low and A1/capita was also low. Lezha ranked second lowest overall for IHD. Tirana ranked with the highest IHD mortality.

CONCLUSIONS

Average milk protein/capita varied across breeds. A1 fraction of milk casein varied from 0.2257 to 0.4732.

A weak correlation was 0.15 for A1 β-casein/capita in milk and cream.

Correlation of 0.15 is not very strong and supports weakly the A1 hypothesis for IHD but such ecological relationships cannot determine causality.

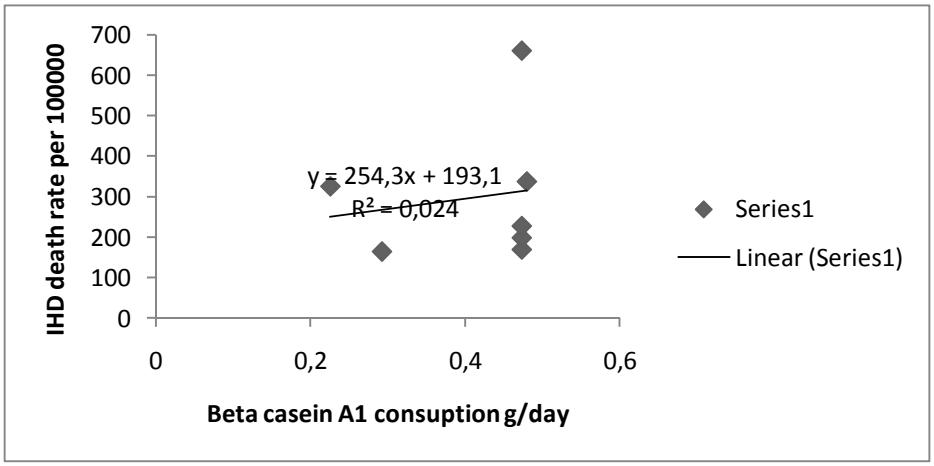

Figure 1: Beta casein A1 consumption and IHD death rate in 2008.

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