

## Annurca Apple Nutraceutical Setting Up for Possible Multiple Human Health Benefits

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**Received:** April 14, 2019; **Published:** April 27, 2019

**Keywords:** *Health and Cardiovascular Diseases; Cholesterol; Metabolites; Phytosterols; Fruit; Annurca Apple Cultivar; Geographical Origin*

Apple (*Malus domestica*) is among the most frequently consumed fruit around the world, especially in Northern Europe area and North America and mammalian studies on apple may help to clarify the effect of this fruit on cardiovascular diseases (CVDs) risk markers. A pre-eminent risk factor for the development of CVDs is Atherogenic dyslipidemia, a pathological imbalance of circulating lipoproteins such as low-density lipoproteins (LDLs), very LDLs, and high-density lipoproteins (HDLs). Data present on Medline suggest that a high intake of fruits is associated with a reduced risk of cardiovascular disease (CVD) and lowered plasma cholesterol, but the specific effects of apple fractions, and processed apple are less well-studied [1-3]. Moreover, apples contain phytosterols and polyphenols that are secondary plant metabolites and high doses of their intake are known to inhibit the uptake of cholesterol. The comparison of a medicalised approach to chronic disease prevention with that of lifestyle one has been previously estimated (polypill versus polymeal). "An apple a day keeps the doctor away," a public health message delivered by parents and teachers since the 19th century, is an example of how concise, clear, and accurate Victorian health promotion can truly stand the test of time [4]. Thus a 150 year old proverb is able to match modern medicine and is likely to have fewer side effects. Moreover to model the effect of inquisitiveness was studied on feline mortality rates but in next future with human health benefit, I hope although people with an apple allergy could be prescribed an alternative less allergenic fruit with similar health benefits according references [5] or autoctone cvs less known presented in marginal area with unrevealed beneficial proprieties as Annurca apple cultivar which was produced organically from different geographical regions in Mediterranean area in Italy: Benevento area, Picentini area, Alto Molise (i.e. Sant'Angelo in Pesco, Is) given that Regional discrimination of apple juice was possible using phenolic compounds, as secondary metabolites. Recently was presented a study addresses the use of primary and secondary metabolites to differentiate apple juice according to the cultivar and geographical origin [6]. Especially the minor phenolic compounds flavanols and flavonols, were confirmed as unambiguous and reliable markers of authentic apple juice for geographical origin differentiation including: flavanols (catechin, epicatechin, procyanidin B<sub>1</sub> and procyanidin B<sub>2</sub>+B<sub>4</sub>); flavonols (quercetin-3-rhamnoside and quercetin-3-glucoside + quercetin-3-galactoside) and the levels of *trans*-piceid. The prediction ability is about 60% and selected primary and secondary metabolites were as a tool for the differentiation also for apple juice that was produced organically and derived by different geographical areas by means of HPLC and NMR tandem-studies that allow a complete separation among different apple cultivars when all the detected metabolites (with the exception of the aldohexose D-Glucose, and dicarboxylic compound L- Malic acid) were included in the Linear Discriminant Analysis (LDA) [7]. Thus, in table 1 is reported the nutritional composition of 100g of apple according to Department for Environment, Food and Rural Affairs, Family food 2010, DEFRA, 2011 and in table 2 clinical parameters (mg/dL +SD) accordingly to researches reported by Novellino and his co-workers.

Amount per 100g of apple ( <i>Malus domestica</i> )	Nutritional component
35.4	Energy (kcal)
0.09	Fat (g)
0.02	Saturated fatty acids (g)
0.01	Monounsaturated fatty acids (g)
0.05	Polyunsaturated fatty acids (g)
0.00	Cholesterol (mg)
1.39	Fibre (g)
0.00	Salt (g)

**Table 1:** Nutritional composition of 100g of apple according to Department for the Environment, Food and Rural Affairs. Family food 2010, DEFRA, 2011.

TC	234.9 ± 13.1
LDL-C	183.3 ± 11.4
HDL-C	36.2 ± 8.5
Glucose	108.2 ± 8.4
Triglycerides	97.0 ± 9.3

**Table 2:** Clinical parameters (mg/dL + SD).

AMS: AppleMetS®; HDL-C: High-Density Lipoprotein Cholesterol; LDL-C: Low-Density Lipoprotein Cholesterol; TC: Total Cholesterol; SD: Standard Deviation.

Experimental details are reported in [6] Finally, traditional and geographical products can directly contribute potential probiotics to the consumer. However, the ability of origin products to survive and to persist in GIT in the short and long term should be observed in participants of future clinical trials studies, so that investigations are required to define an optimal dietary intake of the autochthonous bacteria supplied with the Annurca apple and ensure more uniform outcomes. Consequently, the ability of the bacteria derived from apples to survive in GIT for periods long could be tested in next study investigated according to experimental design [8].

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**Volume 14 Issue 5 May 2019**

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