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ABSTRACT BOOK

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replacements. A deep computational analysis, based on the use of the recently resolved crystal structure of the Hsp60-Hsp10 football-shaped complex [4], could explain how these missense mutations impact protein structure/function and unveil their pathological significance. As noticed, Glutamic Acid 129 forms a salt-bridge with the lysine 133 of a monomer belonging to the opposite ring in the double-ring tetrameric complex. Thus, its replacement with a lysine could prevent the formation of this important inter-ring contact, impairing the formation and/or the stability of the macromolecular complex. Valine 287 is located at the apical domain near those residues directly involved in the interaction with the co-chaperonin Hsp10. Its replacement with an isoleucine, which has a higher molecular mass, could create steric bulk and alter the proper interaction with the co-chaperonin, compromising, also in this case, the formation of the macromolecular complex [5]. This first *in silico* analysis can drive further experimental analysis *in vitro*, required to validate the hypothesis inferred from the solved crystal structure, and to verify the real impact of these missense mutations on protein structure/function, mitochondrial activity and cells viability, in order to understand the induced molecular mechanisms responsible for the disease onset.

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NUTRITION AND METABOLISM

MEDICINAL MUSHROOMS AS INGREDIENTS IN SUPERFOODS, PREBIOTIC EFFECT AND ROLE ON HUMAN HEALTH

Fortunato CIRLINCIONE, Giuseppe VENTURELLA

Dipartimento Scienze Agrarie, Alimentari e Forestali, Università di Palermo, Italy

Since ancient times mushrooms were considered a source of biological compounds (Venturella *et al.*, 2021). People appreciated mushrooms for their culinary properties and nutritional value, after the discovery of their medical properties they start to be used as food supplements and in the mycotherapy (Jayachandran *et al.*, 2017). These properties were imputable to different molecules with biological activities included in mycelia and fruiting bodies. The main bioactive compounds are the indigestible oligosaccharides and polysaccharides like chitin, hemicellulose, α and β -glucans, pleuran, lentinan, schizophyllan, mannans, xylans, and galactans, that show high effects on modulation and stimulation of gastrointestinal tract of microbiota, thus acting as prebiotic (Venturella *et al.*, 2021; Singdevsachan *et al.*, 2016). The International Scientific Association for Probiotics and Prebiotics (ISAPP) describe the prebiotic as “a substrate that is selectively utilized by host microorganisms conferring a health benefit” (Gibson *et al.*, 2017). They improve the growth of probiotic bacteria (in particular lactic acid bacteria) in the human gut and express the opposite effect on pathogen bacteria (clostridia, *Escherichia coli*, and *Salmonella*), which limits the growth, ensuring the health of intestinal microbiota (Synytsya *et al.*, 2009; Singdevsachan *et al.*, 2016). The studies on mushrooms showed that they carry out several functions to contrast disease like atherosclerosis, cancer, hypersensitivity, vascular diseases and help to minimize the damage that carries out by bacterial and viral infection (Gargano *et al.*, 2017; Jayachandran *et al.*, 2017). Mushrooms prebiotic compounds can normalize intestinal dysbiosis (reduce Firmicutes/Bacteroidetes ratio) with reduction of metabolic disorders, such as insulin resistance and hypercholesterolemia, determining body weight loss and anti-obesity effects (Meneses *et al.*, 2016). For the reasons given above, the industrial interest in prebiotics increased in recent times due to the possibility of their use as functional ingredients in the production of different types of foods (Davila *et al.*, 2019). In particular, mushrooms are considered a very versatile ingredient. They are used as fresh, dried (powdered), or as extracts, to obtain different products in which the previously described properties are added or increased. Authors investigated different species of medicinal mushrooms for improving the functional properties of meat-based foods (Kurt and Gençlepe, 2018), bakery products (Gaglio *et al.*, 2019), cheese (Ribeiro *et al.*, 2015), cheese-like foods (Okamura-Matsui *et al.*, 2001) and beer (Leskosek-Cukalovic *et al.*, 2010). The interest of the industry for healthy superfoods using prebiotic fortification using medicinal mushrooms is pointed out.

ADIPOSE-DERIVED STEM CELL DIFFERENTIATION, BEIGE PHENOTYPE AND INFLAMMATION

Sara CRUCIANI¹, Giuseppe GARRONI¹, Emanuela BELLU¹, Carlo VENTURA², Margherita MAIOLI¹

¹Department of Biomedical Sciences, University of Sassari;