the last year. The causal relationship between HPV and cervical cancer was known by 71% of the participants.
From the participants, 43% had heard of the HPV vaccine, principally by mass media like newspapers, television, radio and 66% of these knew the correct age group for which the HPV vaccine was recommended in France. 98% were aware that only females were eligible for the HPV vaccine and 77% that the vaccine has to be administered before the onset of sexual activity. Only 4% of the participants had received at least one HPV vaccine dose. Fifty-two percent of the women, despite vaccination, knew that population-based screening for cervical neoplasia needs to be continued.
Conclusion: One year after introduction of the first two HPV vaccines in France, only 43% of women in our study knew HPV causes cervical cancer and that women can get vaccinated against it.

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Modulation of mRNA and protein levels of CYP1A1, 1A2, and 1B1 in nontumorigenic breast epithelial cells (MCF10A) by cabbage juice and its active components

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Epidemiological migrant studies have shown that consumption of raw or short cooked cabbage and sauerkraut is connected with significant reduction of breast cancer incidences. Concurrently, some of the active components of cabbage juices like indole-3-carbinol (I3C), 3,3′-diindolylmethane (DIM) – a major in vivo acid-catalyzed condensation product of I3C, and sulforaphane (SUL) were determined as potential anticancer agents.
Our previous study showed that cabbage juice and its isolated active ingredients affected the expression of the estrogen metabolism key enzymes including cytochrome P450 1A1/1A2 and 1B1 in MCF7 breast cancer cell line. The aim of the present study was to investigate the effect of cabbage and sauerkraut juices of different origins and I3C, DIM and SUL on the expression profile of CYP1A1, CYP1A2, CYP1B1 mRNA and proteins level in nontumorigenic human breast epithelial MCF10A cell line.
Cells were treated with the pure compounds at the concentrations relevant to those observed in human plasma. After 72 hours of incubation the screening of cDNA from total RNA was performed using real-time PCR assay with specific primers for CYPs and protein level was determined by Western blot analysis. The increased expression of CYP1A1 was found as a result of cabbage juices treatment. Sauerkraut juice has stronger effect than raw one. Similar effect was exerted by I3C and DIM. The CYP1A1 protein level was increased as result of I3C treatment at the dose of 30 μM. In contrast, a decreased level of protein was detected after treatment with lower dose of this compound (10 μM), both doses of DIM, and SUL at the dose of 5 μM. The decrease in CYP1B1 mRNA was observed after sauerkraut juice treatment. In contrast, expression of CYP1B1 was increased by both indoles and SUL at the concentration of 108 μM. CYP1B1 protein was decreased as result of DIM treatment at the dose of 5microM. Up-regulation of CYP1A1 and CYP1A results in the reduction of active estrogens and might prevent breast carcinoma development. Thus the increase of CYP1A1 and CYP1A2 mRNA levels as a result of treatment of MCF10A breast epithelial cells with indoles or CYP1A1 and CYP1A2 mRNA and protein levels with cabbage juices observed in this study, may explain in part the epidemiological observations linking the cabbage consumption with decreased risk of breast cancer development.

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Purification and characterization of an N-acetyllactosamine specific lectin from tubers of *Arisaema utile* having anti-proliferative effect on human cancer cell lines

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Objective: Lectins are defined as carbohydrate binding proteins other that enzymes and antibodies. Lectins have emerged as very important macromolecular tools to recognize carbohydrates on cell surfaces. The present work is designed to purify and characterize monocot lectins with interesting biological properties from Indian monocot plants.
Methods: On the basis of sugar specificity determined by hemagglutination, asialofetuin-linked affinity was used to purify monocot lectins. Anti-proliferative potential were determined through sulphorhodamine-B assays.
Results: *Arisaema utile* lectin (AUL) gave a single band in SDS-PAGE at pH 8.3 corresponding to subunit Mr 13.5 kDa. The native molecular mass of 54 kDa suggested a homotetrameric structure. Like other monocot lectins, AUL gave multiple bands in isoelectric focusing and in native PAGE at pH 8.3. AUL was inhibited by N-acetyl-D-lactosamine (LacNAc), a disaccharide and asialofetuin, a complex desialylated serum glycoprotein. When treated with denaturing agents, the lectin was stable in the presence of urea (3 M), thiourea (4 M) and guanidine HCl (4 M). The lectin had no requirement for divalent metal ions i.e. Ca^{2+} and Mn^{2+} for its activity. AUL was a glycoprotein with a carbohydrate content of 1.2%. Amino acid analysis revealed high content of aspartic acid, glutamic acid, glycine and threonine and a very low amount of methionine but complete absence of cysteine. Amino acid modification studies of AUL revealed the involvement of tryptophan and tyrosine residues involved in lectin–sugar interaction. AUL exhibited a fluorescence emission maximum (lambda max) at 340 nm upon excitation at 295 nm. Using Far UV CD spectra the estimated secondary structure was 37% alpha-helix, 25% beta-sheet and 38% random contributions. In vitro anti-proliferative activity of AUL was tested on eleven different human cancer cell lines viz. MCF-7 (Breast), SK-N-SH (CNS), 502713 (Colon), Colo-205 (Colon), HCT-15 (Colon), HT-29 (Colon), SW-620 (Colon), Hep-2 (Liver), IMR-32 (Neuroblastoma), DU-145 (Prostate) and PC-3 (Prostate). The concentrations of AUL which produced 50% inhibition (IC50) of cancer cell lines viz. SW-620, HCT-15, SK-N-SH, IMR-32, Colo-205 and HT-29 at 38, 42, 43, 49, 50 and 89 μg/ml, respectively.
Conclusion: The purified Arisaema utile lectin was found anti-proliferative on human cancer cell lines.

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Breast cancer: Molecular mechanisms underlying resistance to chemotherapy

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Breast cancer is the second leading cause of cancer deaths. This disease is estimated to be diagnosed in over one million people worldwide. Although chemotherapy is a successful treatment regime in many cases multidrug resistance (MDR) remains one of the main obstacles in treatment of these cancer patients. Several proteins have been identified that are able to prevent the intracellular accumulation of anticancer agents by efflux mechanism. Such drugs are exported in both ATP-dependent and -independent manners. To the ATP-dependent group belongs the ATP-binding cassette (ABC) transporter family, which includes P-gp, MRP, BCRP, etc. Another protein related to MDR, though not belonging